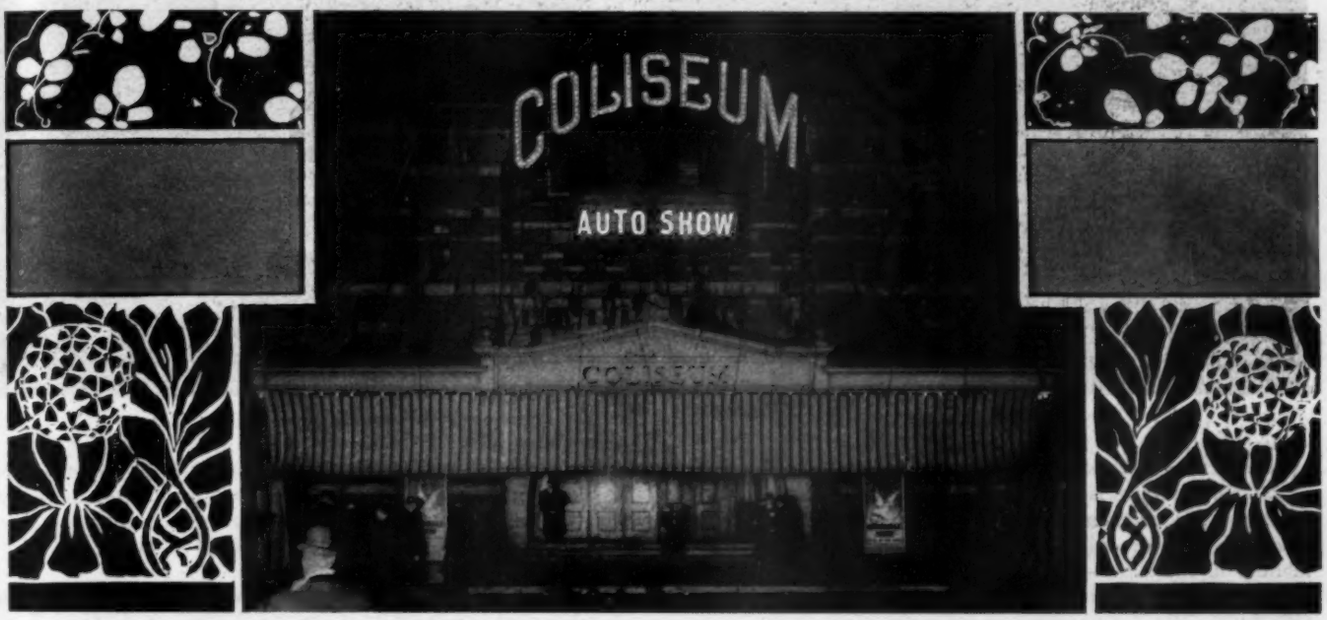
VOL. XX NEW YORK—THURSDAY, FEBRUARY 11, 1909—CHICAGO No. 6

THE AUTOMOBILE



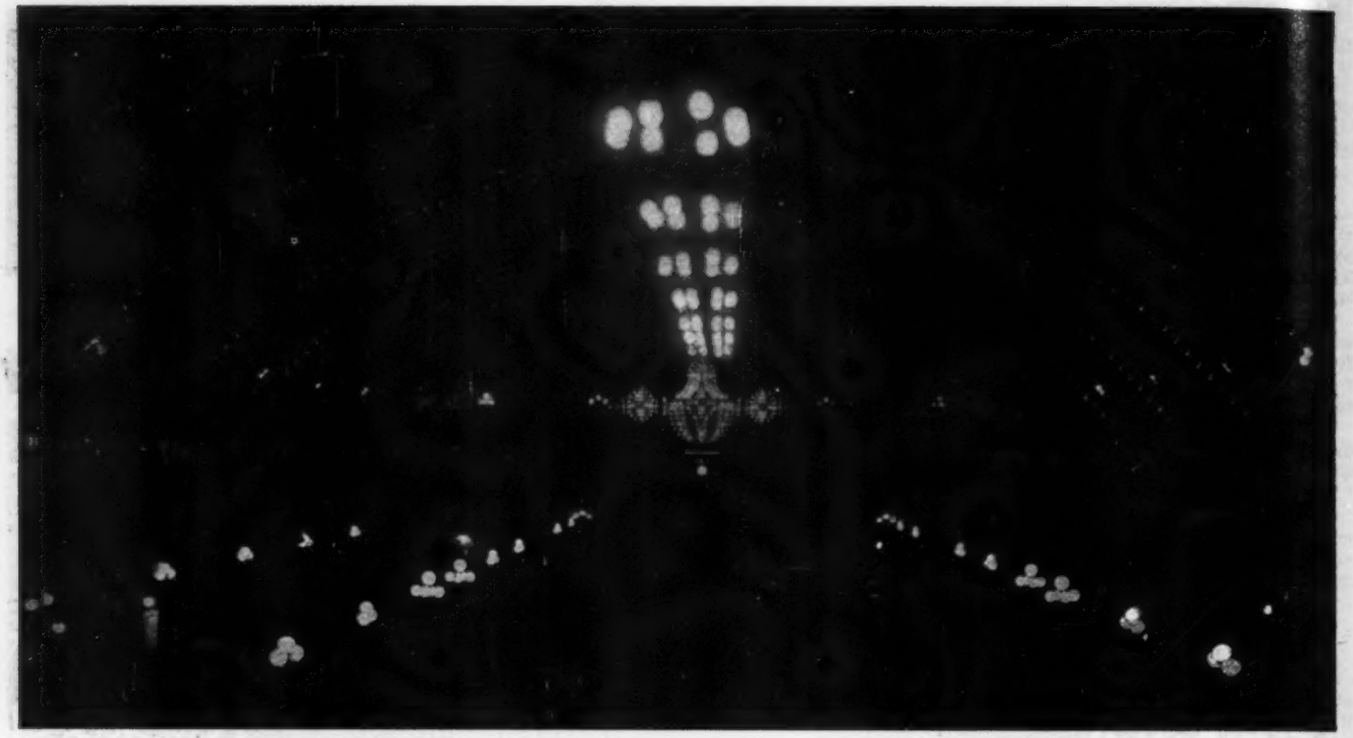
CHICAGO, Feb. 12.—Results are what count. The methods of the East are not always productive out this way, and Broadway isn't the only thoroughfare on which automobiles are displayed and sold. Furthermore, this show of the National Association of Automobile Manufacturers is artistically and completely the superior of either one of the two New York exhibitions, though, it must be said in the same breath that Manager Miles had plenty of material for the rolling of the two displays into a single affair. The job has been well done—most harmoniously accomplished—and the WEST (in capital letters) can truthfully boast that the agent and the individual buyer have an advantage over the East (only one capital) in making 1909 selections in one place instead of on two separate occasions.

There is confident feeling all around, out here, and the large out-of-town attendance figures largely in the premises, for there is undisputed railroad and hotel evidence that people have come many, many miles and from varied directions for the well defined purpose of buying automobiles of the present vintage.

For once, at least, real good weather favored the Saturday opening of the Chicago show. The temperature was above freezing, there was no wind, and the sun shone at intervals. Early visitors who went to the show at the hour of opening—2 o'clock in the afternoon—had a good chance to inspect the exhibits closely before the usual enormous night crowds flocked in after dinner. Eastern tradesmen, however, did not begin to arrive in any number until Monday morning.

To some the decorative scheme might appear to be getting too much attention. The exhibits of cars and chassis are somewhat overshadowed by the massive and elaborate decorations, with their variegated coloring. The view from one side to the other of the main hall is also cut off by the low papier-maché arches, molded and colored in imitation of cast bronze.

Notable absentees in the New York shows of this Winter who have prominent exhibits in the main hall are the Oldsmobile Company, Thomas B. Jeffery & Company, American Locomotive Company and the Bartholomew Company.



Above the "Blue" of the Car Displays the Decorative Scheme Proclaims Superiority.

There is no commercial vehicle section this year. The old Tattersalls building is unfit for use and badly located, and no other suitable building could be secured within reasonable distance. There are only three exclusive commercial vehicle exhibitors in the show—the Rapid Motor Vehicle Company, Grabowsky Power Wagon Company, and the Randolph Motor Car Company. The last two are located in the Coliseum Annex and the first in the Armory. Besides these, several pleasure car makers, particularly the motor buggy builders, are showing models of light gasoline delivery wagons.

The motorcycle section, which occupies all the central space on the second floor of the Annex, comprises nineteen different makes of machines, both American and foreign, and is the most comprehensive and best arranged exhibition of two-wheelers ever made in this country.

Closed cars for town use are in the decided minority, although Chicago uses many coupé and limousine machines. The prevailing models on display are touring cars, with folding tops, toy tonneaus, four-passenger bodies with a pair of bucket rear seats, and cross-country or high-powered runabout machines with rumble seat.

A dozen makers are showing high-wheeled machines, generally designated as motor buggies. Henceforth, however, the name will be a misnomer, for these machines are already undergoing a change in style. Several builders are fitting special runabout bodies with a third seat in the rear, bodies with true automobile hoods and other styles not borrowed from the carriage trade. In several cases engines are being located in front, sliding gear or planetary change-speed mechanism, differentials, etc., fitted, and other automobile features incorporated. Soon the chief resemblance these machines will bear to buggies will be in the high wheels and solid tires—and the wheels even are in some cases being reduced in diameter to 36 inches.

Were it not for the brilliant decorations, the show would present a somber aspect, for the prevailing finish of the machines is black, with perhaps a 25 per cent. proportion finished in maroon or other dull shades of red. Other colors used are generally of a quiet tone, such as dark green, brown, gray and white. Exceptions that prove the rule are several flaming scarlet machines and a violet-finished and upholstered electric coupé—a bridal model that attracts much attention.

The motor buggy has even acquired the distinction of a place of honor on the main floor of the Coliseum, as a recognition of this type as a permanent style of automobile. The Holsman—first and most consistent make—is found under the gallery against the north wall.

Miniature models of the engines used in their cars are displayed by the Maxwell-Briscoe Company and the Model Automobile Company, maker of the Great Western. These miniatures are only about a foot long, but are perfect working models, and the Great Western model is shown in operation driven by a small electric motor, the use of gasoline in the building being forbidden by the fire department.

The automobile show is a practical school of motoring, and hundreds of men and women—and probably more boys and young men—get a clearer idea of the actual operation of a gas engine and the change-speed and differential gears at the show than they can acquire in any other easy way. Several car exhibitors—as the Dayton Motor Car Company and the Chalmers-Detroit Motor Company—show full sixed-sized motors sectioned down through the cylinders to show the action within the cylinders; others show the transmission in operation under a glass top to the gearcase, while parts makers show the steering gears and differentials in a manner to make the action plain.

The Berliet and Fiat are the only foreign cars in the show, and they are located in the Armory.

Here, as at the New York shows, the interest shown by visitors in the exhibits of component parts and accessories in the galleries is very pronounced, so much so that the narrow aisles high up under the steel trusses of the roof are quite inadequate. There is barely room in the aisles for two persons to pass each other under the arches and many a hat and some heads in passing have suffered from unexpected contact with structural steel.

Prize cups are prominent features of a number of the stands. The Vanderbilt silver cup at the Locomobile stand and the Savannah gold cup at the Fiat stand are the largest and most prominent, while the aggregation of cups and trophies won by the Pierce Arrow in endurance, economy, and hill climbing contests, and the collection of race prizes won by the Maxwell cars are attractive features of the Coliseum displays.

So inadequate to the present requirements of a national automobile show at the present time is the Coliseum that in addition

to the Renault, Ford, and P. & S. private displays outside, the Chadwick, American, and Velie are also excluded from the show through lack of space and are being displayed in private salesrooms: the Chadwick at 1218 Michigan avenue; the American at 1507 Michigan avenue, where the Petrel is also holding open house, and the Velie at the local branch of the Velie Motor Vehicle Company, of Moline, at 1615 Michigan avenue. The Palmer & Singer models are being exhibited for the first time in the West at the Auditorium Hotel on the main floor.

There have been numerous meetings and gatherings during the week. The branch managers and agents of various concerns have met and dined and talked and accomplished various things. The A. M. C. M. A. had its annual meeting; the A. A. A. Executive Committee is holding forth to-day; the makers and importers interested in racing have occupied much time in talking rules and race control; and all around there has been an automobile clearing house for the exchange of innumerable ideas and the discussion of matters requiring up-to-date attention.

SOLVING THE CONTEST SITUATION.

CHICAGO, Feb. 10.—There has been much talk about the control of contests, both racing and otherwise, in the past few days, and this is the way it is sized up on this Wednesday morning:

Beginning last Saturday there were sessions, one after another, of representatives of American concerns and foreign importers interested in contests and racing. The final result is a plan to have what will be termed a Manufacturers' Contest Association, membership on which will be limited to makers producing 50 cars annually and to importers handling 25 cars. This body will cooperate with the Contest Board of the A. A. A., providing the plan is acceptable this afternoon to the representatives of those manufacturers who have agreed to attend a meeting called for the purpose of considering the whole subject.

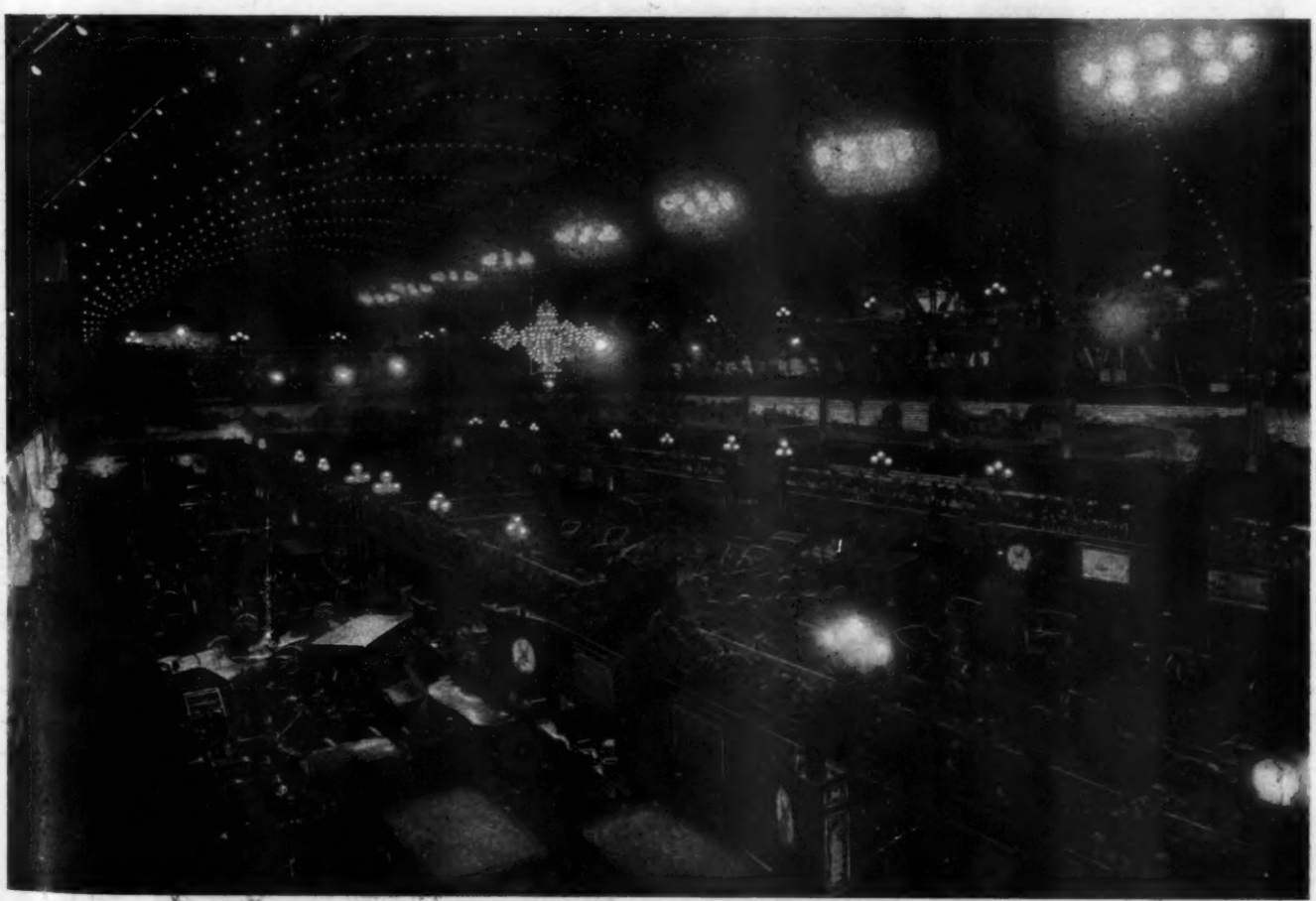
Next will come the offering of the more or less amended plan as it will be presented for ratification to-morrow to the executive committee of the A. A. A., which holds a monthly meeting.

The N. A. A. M., the A. M. C. M. A., the A. L. A. M., and the importers will be represented on the Manufacturers' Contest Association, which would figure in the rule-making, granting of sanctions, etc. But the plan may be somewhat altered.

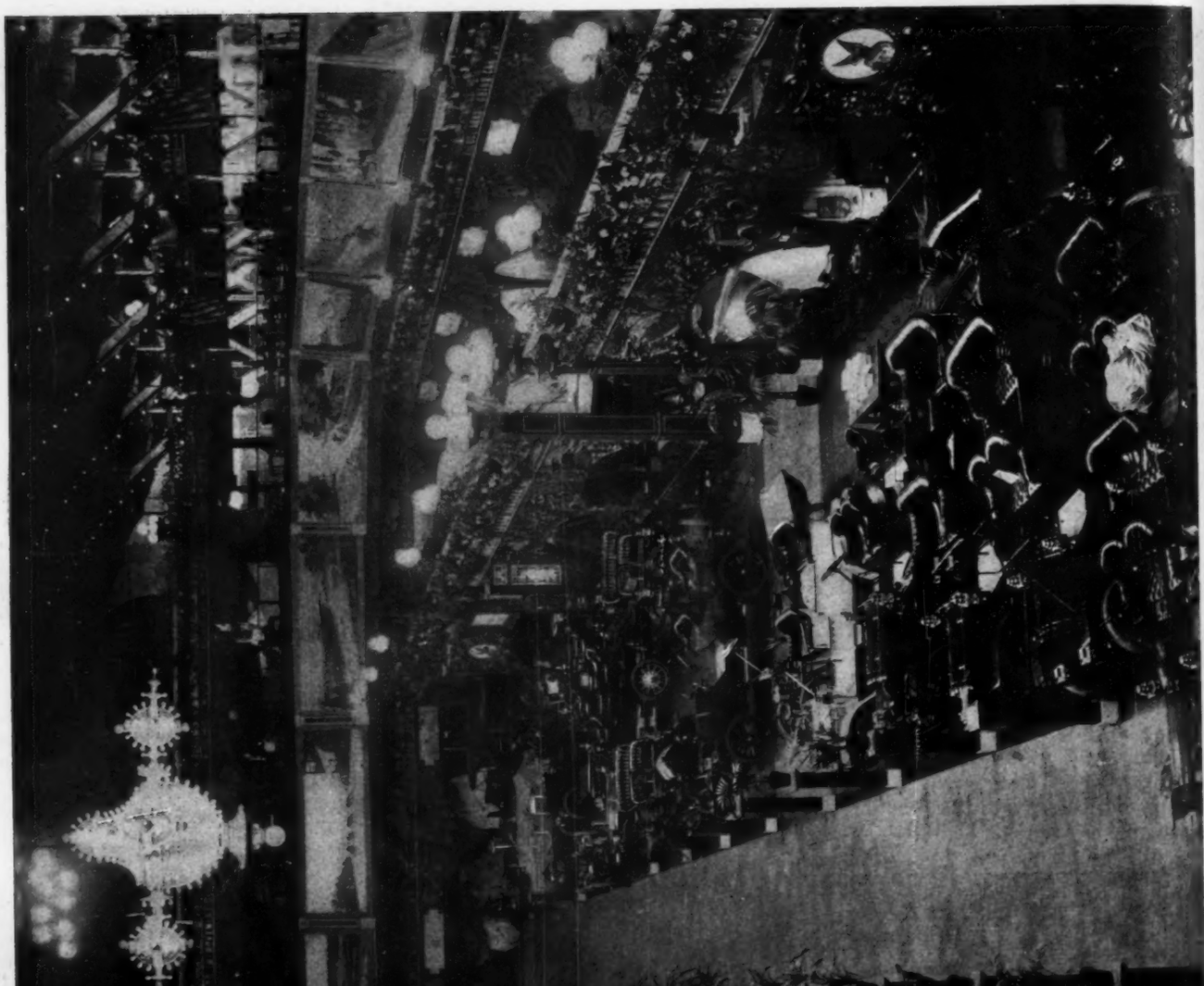
At the meeting which completed the preliminary work were the following: Howard E. Coffin (Chalmers-Detroit), H. O. Smith (Premier), William E. Metzger (E-M-F), Harry Lozier (Lozier), Paul La Croix (Renault), E. R. Hollander (Fiat), George H. Stroud (Apperson), Charles B. Shanks (Stearns), E. P. Chalfant (Association of Licensed Automobile Manufacturers), Alfred Reeves (American Motor Car Manufacturers' Association). A. R. Pardington and F. J. Wagner were also present upon invitation.

SMITH ELECTED PRESIDENT A. M. C. M. A.

CHICAGO, Feb. 10.—H. O. Smith, of the Premier Motor Mfg. Co., at the annual meeting of the American Motor Car Manufacturers' Association, was unanimously elected to the presidency, succeeding Benjamin Briscoe, who declined re-election after having served two terms. The other officers named were: C. G. Stoddard, Dayton Motor Car Company, vice-chairman; S. H. Mora, Mora Motor Car Company, treasurer; G. Vernon Rogers, Mitchell Motor Car Company, secretary, and W. H. Vandervoort, Moline Automobile Company, auditor. These three members of the committee management were re-elected: Charles M. Lewis, Jackson Automobile Company; W. C. Marmon, Nordyke & Marmon Company, and W. H. Vandervoort, Moline Automobile Company. Of course, Alfred Reeves, under whose capable management the association has progressed to a plenteous treasury and forty-two members, will continue as general manager. Both Mr. Briscoe and James Couzens, who was the first chairman of the committee management, will be remembered with souvenirs.



On the Coliseum's Main Floor a Galaxy of Splendid Automobiles Bask in the Milky Way of Lighting.



The Retina of the Camera Found Salient Features of the Landscape and Much to Picture Within the Coliseum's Ample Auditorium.
Photograph by Howe & Arthur, Chicago.

SOMETHING ABOUT THE NEW COMERS

A TOUR of the stands in the Chicago show reveals, besides a few newcomers with interesting exhibits, a fair variety of innovations and departures on the part of long-established concerns. On the whole, however, the seeker for extreme novelty is certain to be disappointed, unless his technical knowledge is so thorough that his interest finds satisfaction in the contemplation of the details and finer points of automobile engineering which escapes the average lay visitor's attention. Those of the old-timers among the motor-wise will seek with perhaps just a shade of regret for the work of the once perennial freak designer, whose vagaries afforded a certain entertainment even while they were a subject for derision. The automobile "game," which once supplied a conglomeration of some of the most fearful and wonderful devices man ever devised, even while it also marked time for a now historic engineering development, is long since dead and in its place has come the automobile "industry," which in its settled conservatism and substantial standing is second to none of the great fields of mankind's business and technical activities. Among those who did not exhibit at either of the New York shows are the following:

American Locomotive Company, New York and Chicago, continues to improve on its home-designed product to the extent of far outdistancing the excellent reputation it originally gained by its domestic duplication of a well-known foreign machine. The 1909 "Alco," as the car is now called, is built from stem to stern with the constant idea of making good on the manufacturer's slogan, "It stays new." The cylinders are of imported cast-iron, having a vanadium content, and are said to excel over those of ordinary product in that pitting never occurs in the course of wear, while a polish impossible to other irons is attained through use. Integral cams, make-and-break ignition with Bosch magneto, the extensive use alloy steels and imported bearings, four-speeds, and close engineering attention to detail and finish, are among the hallmarks of high quality that stand forth. The line includes a six-cylinder, 60-horsepower chassis, chain driven; a chain-driven, four-cylinder, 40-horsepower, and a shaft-driven 22-horsepower, with a variety of bodies.

Bartholomew Company, Peoria, Ill., is focusing its 1909 activities upon two models —a touring car and a roadster, both propelled by the same 45-horsepower engine, and containing substantially the same structural details, but differing in price. The rear-axle mounting of the change-speed gear in a unit with the differential housing is employed, with the usual selective operation affording three speeds forward and reverse. High-tension ignition, with magneto extra, is regular equipment. Unusually attractive are the body lines and the unusual harmony of the general design.

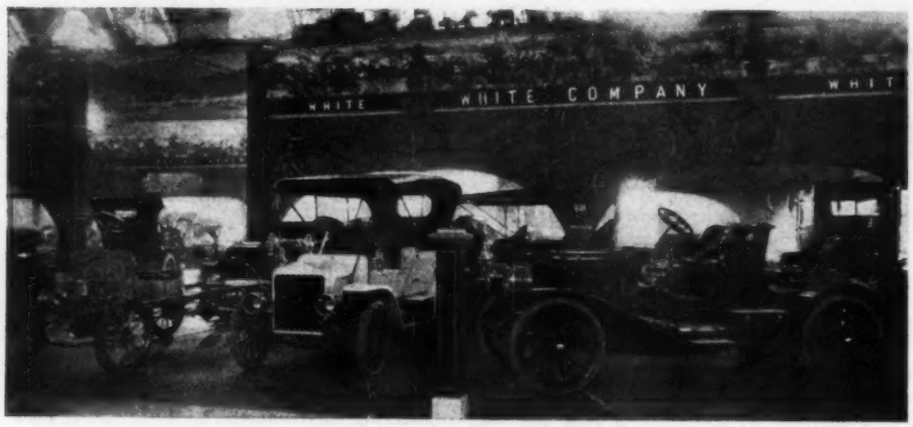
Dorris Motor Car Company, St. Louis, adheres to structural features justifying its claim to be called the "car of simplicity." With the radiator off, the camshaft with its bearings is readily removable through the front of the crankcase; with the flywheel and transmission out, the crankshaft comes out rearwardly in a similarly simple manner. The Dorris Company still adheres to its policy of building only one model of chassis—for touring, roadster, limousine, convertible, cab-landaulet, and other bodies. Besides simplicity, extreme accessibility is sought. Both exhaust and inlet valves are contained in removable cages, facilitating regrinding and maintenance. The cams are integral with the camshaft. The motor, clutch and change-speed gear are combined in the now popular unit power plant. The selective sliding-gear transmission affords three speeds forward and the reverse. Atwater-Kent ignition is stock equipment, but magneto is optional for those preferring it. A point is made of the liberal tire equipment, 34 x 4 being used all around.

Emancipator Auto Company, Aurora, Ill., is a newcomer in the low-price field, and is displaying a fully-equipped four-passenger car, with top, lamps, glass front, etc., propelled by a four-cylinder motor, driving by shaft through a two-speed planetary gear. The engine is a double horizontal opposed, an unusual construction,

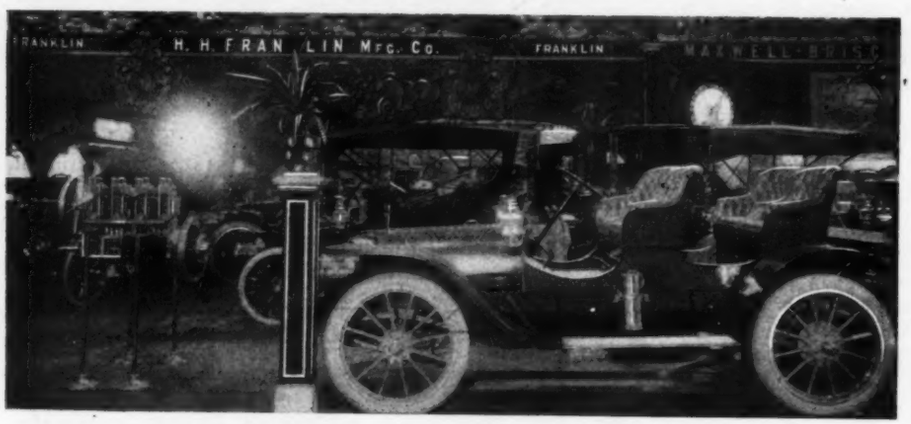
Packard Chassis Is Reflected From a Mirror on the Floor.

Peerless Chassis in Front of the Louis XVI Limousine.

The Retina of the Camera Found Salient Features of the Landscape and Much to Picture Within the Coliseum's Ample Auditorium. Photograph by Howe & Arthur, Chicago.

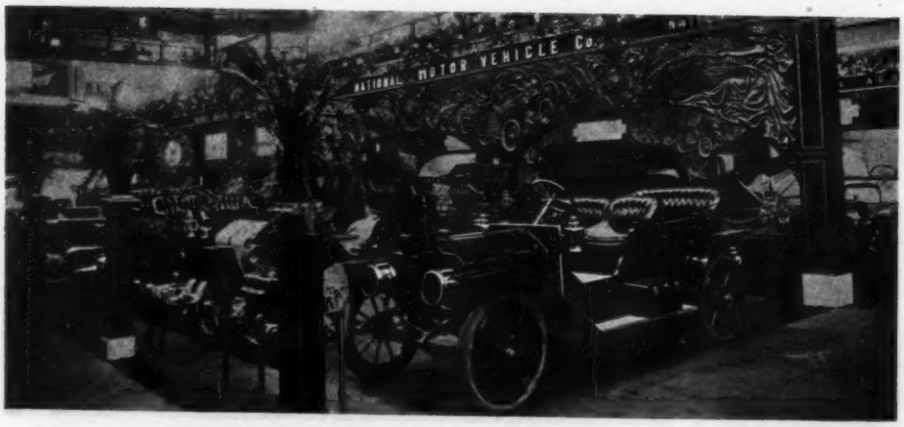


White Steamer with the Roadster Type to Whet Interest.



Franklin Air-Cooled Cars Showing Resilient Chassis.

Elmore Two-Cycle Perfection and the Flexibility Entailed.



National Cars as Jewels in a Sea of Relief Decorations.

possessed, however, of numerous features of merit. The crankcase, for example, is integral with the cylinders. Besides the touring car are a two-cylinder runabout and a delivery wagon on the runabout chassis. In this way the whole field is covered.

Thos. B. Jeffery & Company, Kenosha, Wis., are showing for 1909 a line that is a center of attraction, especially to the intending purchaser who seeks large, commodious cars of standard design at minimum prices. The Rambler spare wheel attracts especial attention, and the ease with which it can be interchanged, in four minutes, with one of the road wheels does not fail to appeal to the motor-wise who have struggled with roadside repairing of deflated tires. The offset crankshaft of the Rambler motors, placing the connecting rods in most effective position to receive the force of the expanding gases, is another point on which great stress is laid. The large openings to the crankcase, readily permitting connecting-rod adjustment from above, take the eye of those who worship at the shrine of accessibility. Another detail in which Rambler cars excell is the running gear, the spring being particularly ample and well designed to afford comfort and avoid breakage.

Meteor Motor Car Company, Davenport, Ia., is making only one model for 1909—a 50-horsepower, four-cylinder machine, with seven-passenger touring-car body. The change-speed gear departs from standard practice in that the gears are always in mesh, operative pairs being engaged by jaw-clutch systems similar to the external and internal gear meshing whereby the direct drive on high speed is obtained in common types of sliding gears. Final drive is by shaft, to a Timken live rear axle. The Bosch magneto constitutes a part of the ignition system,. storage battery being used as auxiliary.

Model Automobile Company, Peru, Ind., is appearing as Western distributers of the Great Western car, which is made in three four-cylinder models, all of standard outline. High-grade construction rather than innovations seems to be the policy behind the design of this machine, so aside from the use of exhaust valves in the cylinder heads and a few other slightly uncommon details, the construction is conservative. Interchangeability of parts is a point that will appeal to the user away from the large centers of population. The leader of the line is a 50-horsepower touring car, from which sizes taper down through the 40-horsepower touring car and the 30-horsepower touring car to a smaller runabout in the process of covering the field.

Olds Motor Works, Lansing, Mich., present an especially striking array of body designs for the prospective customer to choose from. Coupés, limousines, landaulets, regulation touring cars, toy tonneaus, roadsters and "close-coupled" designs, all are regularly catalogued for application to

the several chassis. Magneto ignition, valve-noise silencers, improved circulating pumps, completely protected driving mechanism, and a new live axle design are among the changes in mechanical details.

Owen-Thomas Motor Car Company, Janesville, Wis., is on view with a car fairly bristling with original features. It is a large six-cylinder machine, built with runabout, double roadster and seven-passenger touring bodies, and propelled by a four-cycle engine developing about 50 horsepower. This engine is internally air-cooled by scavenging blasts of air at different points in the cycle, and therefore functions without the use of any cooling ribs or fins whatever. Fuel is supplied by direct injection into the cylinders, and the valves are of an ingenious rotary type. The whole design is particularly interesting in that it would appear to constitute the first public embodiment in metal of ideas originally suggested by Victor Loughead in a series of articles an "Some Trends of Modern Automobile Design," which appeared in *Motor Age* during the Summer of 1907. An ironbound five-year replacement guarantee is evidence of the faith the manufacturers have in the new construction.

Rider-Lewis Motor Car Company, Muncie, Ind., is one of the few concerns that are specializing in the increasingly popular six-cylinder type, their only model being a 40-horsepower chassis, built with touring car, landaulet, limousine and roadster bodies. Simplicity of construction and light weight secured through the elimination of all surplus metal are the keynotes of the Rider-Lewis idea. Accessibility, too, has been given studied attention. Valve cages, for instance, remove upon the mere loosening of a locking ring. The crankshaft is assembled endwise into the one-piece crankcase. The clutch and clutch mechanism are directly under the footboards to facilitate inspection and adjustment. The change-speed gear is mounted on the rear axle. On the whole the cars of this make belong to the class in which accessibility is booked for first place and this fact coupled with a certain harmony of relation of power to weight renders the cars of more than passing interest. Public interest backs up the judgment of the designers.

Streator Motor Car Company, Streator, Ill., is for 1909 departing from its three seasons' old policy of making but one model, and now presents a considerable variety of cars built on two different chasses. An exhaustive search of the mechanism of both types fails to disclose a single radical detail, but it equally fails to disclose anything not of the soundest and most substantial engineering. The engines are four-cylinder in both chasses, 35-40 horsepower in one and 24 horsepower in the other. In the small car the change gear is built into the rear-axle housing. In the large it is of the standard three-speed selective type, with the usual placing.

Stevens-Duryea Showing Three-Point Suspension Splendor.

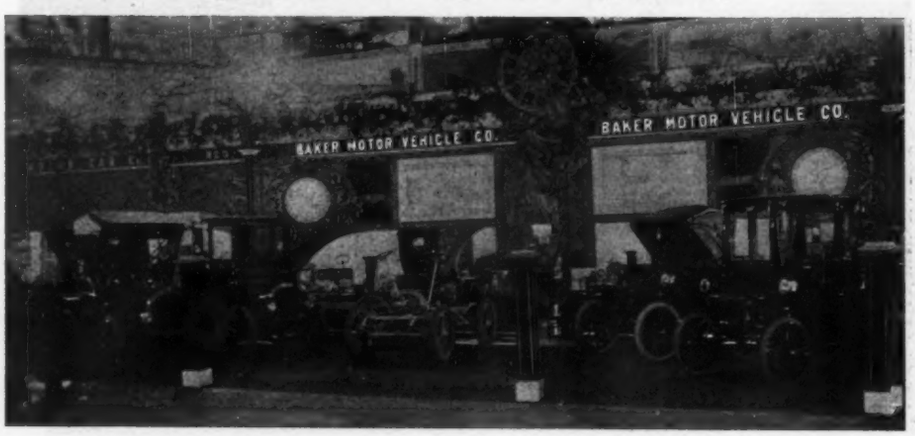
Locomobile with a New Shaft Drive Flexible Chassis.

Haynes Cars Built in Alloy and Special Auto-Steel.

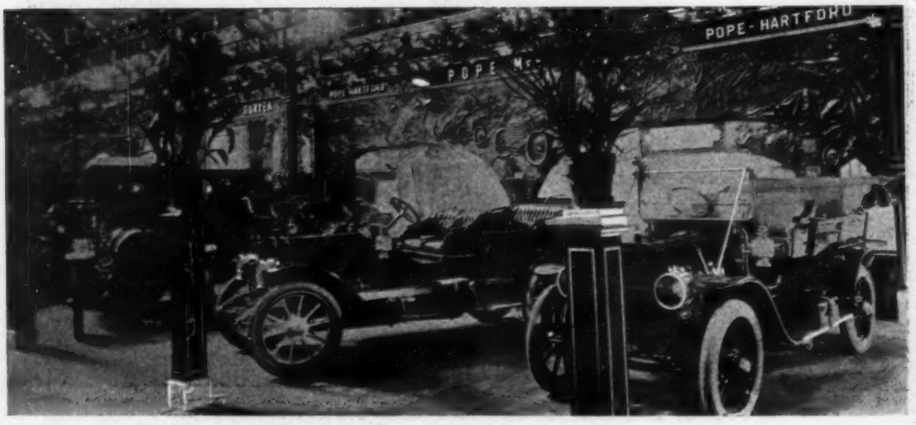
Premier Exhibition of Cars with Multi-Century Ancestors.

Rambler Chassis in the Foreground Is Elevated Effectively.

Reo Shows a Chassis and Spectators Unflagging Interest.



Baker Springs a Surprise in the Electric Chassas.



Pope-Hartford Includes Fine Body Work on Standard Cars.

HIGH-WHEELERS IN EVIDENCE.

Ancestors of all automobiles; neglected for a time; these same cars are now regarded as the fitting conclusion from the point of view of cars in which solid tires are at home, and in which stability resides to a marked extent, especially if road conditions are of the order "un-improved," as they are in many sections of the country. But if the cars of high-wheels will make headway under a handicap of roads, it is plain to be seen that on good roads autoists would have nothing to fear.

That the resilliency of high wheels will render solid tires capable has been adequately demonstrated, and that the high-wheel automobile is the favorite of the doctor and the contractor is but fitting proof of the wisdom of the automobile designers who declined to float with the tide which set up on pneumatic tires and rolled along on boulevards. The low price of the high-wheeler renders it the more fitting, and that it has a place in the art is as certain as the industry itself.

The Clark-Hatfield Auto Company, Oshkosh, Wis., make an exceptionally high-grade buggy type vehicle in one model only, sold at a price allowing the finest construction and workmanship. With a two-cylinder, air-cooled 14-horsepower motor, and a weight of only 1,200 pounds, its ability to go "anywhere a horse will go, and then some," will not be successfully disputed. A single-chain drive with ratchet differential constitutes something of a novelty.

The Columbus Buggy Company, Columbus, O., makers of high-wheel delivery wagons and buggies of several seasons' standing, are including in their line for 1909 a more conventional 35-horsepower touring car with pneumatic tires and other approved details, which they name the Firestone-Columbus. They also continue their excellent pneumatic-tired electric coupés, surreys, runabouts, victorias, phaetons.

The W. H. McIntyre Company, South Bend, Ind., is in the field with nine different models of high-wheeled machines. This concerns succeeds the W. H. Kiblinger Company, and is putting up some of the most convincing arguments, both in advertising and in product, that have yet appeared in favor of the advancing big wheeler.

The Mier Carriage and Buggy Company, Ligonier, Ind., puts out two models, both driven by side chains and both fitted with water-cooled, two-cylinder motors of types more nearly resembling standard automobile than high-wheeler practise. One of the engines is horizontal opposed and the other is a twin-cylinder vertical.

The Staver Carriage Company, Chicago, is showing the most powerful buggy-type machine ever exhibited—a four-cylinder, 22-horsepower machine, with 38-inch wheels and a 98-inch wheel-base. The engine is of the four-cylinder type.

CULLED FROM THE ACCESSORY DIVISION

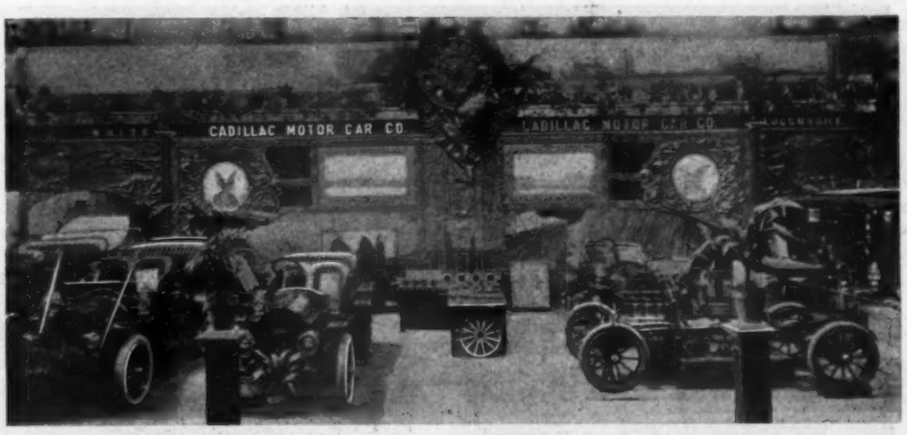
THAT the city by Lake Michigan can boast a Western trade exclusively and inalienably its own, is well demonstrated in the number and importance of the exhibitors who did not display their wares at either of the New York shows. Indeed, no one closely identified with the interests of the trade could afford to be unfamiliar with the novelties to be seen at some of the stands.

Bower Roller Bearing Company, Dayton, O., is a newcomer in the bearing field, but the product of this concern's activities bears every evidence of having attained a quality possible only as the result of high designing ability and prolonged experimental investigation. All of the Bower bearings are of the non-adjustable (except for end thrust) annular type, with the load carried on cylindrical rollers, which are provided, however, with enlarged heads that come into play only to resist end thrust. A special steel alloy containing a percentage of nickel and of extreme hardness and resisting qualities has been developed for this company's use. Finishing is accomplished under water in special grinding machines, and no part passes inspection until it tests to the most extreme accuracy of size and fit. Considerable of a departure in roller bearing manufacture is the production of a line of metric sizes designed to interchange with standard annular ball bearings. Another innovation is a policy of designing to the user's requiments instead of requiring him to use listed sizes.

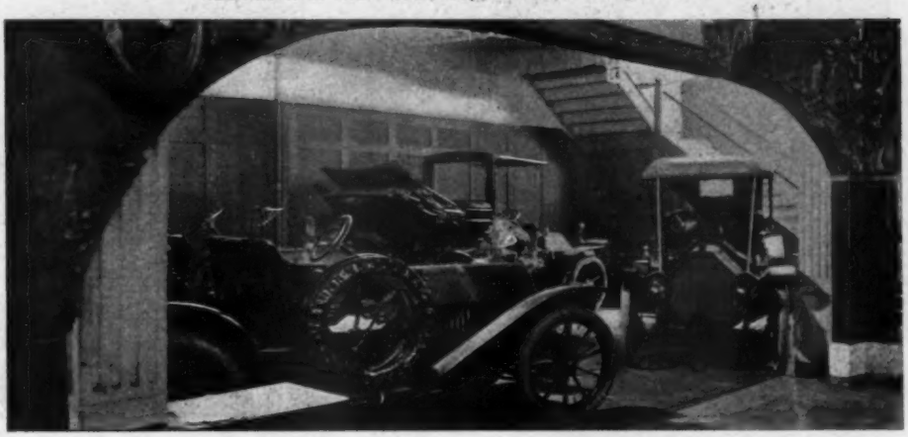
Firestone Tire & Rubber Co., Akron, Ohio, is showing for the first time its new demountable rim for the side-wire solid tires. Extreme simplicity is the great point of this rim, a locking ring serving to let the tire off in case of its injury, so that it may be as quickly replaced with a new one carried on a similar rim. The Firestone demountable rim for pneumatic tires is made to be used in conjunction with either clincher or quick-detachable tires, and is very similar to the type just described, except for the absence of the side flange. It was this rim with Firestone tires on which the Locomobile won the Fairmount Park race in Philadelphia last October. One advantage is that it permits the use of regular inner tubes, without special valves.

Fulton & Zinke, Chicago, are exhibiting circulating pumps, coils, lamps, generators, carbureters, make-and-break spark plugs, the Churchhill timer, an exceptionally practical looking air cranking device, etc. The cranking device consists essentially of two semi-circular cylinders, containing sinble acting pistons arranged to be driven to the end of their travel by air from a tire bottle or other suitable source, controlled by a simple four-way valve that can be manipulaed from the dash. One of the cylinders is much larger than the other, and upon it devolves the work of throwing the crankshaft over 180 degrees at a time. The smaller piston retracts the larger, so that the half revolutions can be effected rapidly and repeatedly until the engine starts. The price is not high, attachment is simple, and the field would appear to be wide open for anything apparently so well adapted to do the work. The novel point of the Churchhill timer is provision for adjusting the contact duration to meet the needs of different engines, a feature for which there undoubtedly is some need.

Hancock Mfg. Co., Charlotte, Mich., long recognized as one of the best multi-feed lubricators on the market, the 1909 models are in every way calculated to uphold their established good reputation. Improvements, however, are confined to details rather than extended to general principles, and simplicity of construction and positiveness of operation are ideals which the technically informed will be especially disposed to approve. A new compound tire pump is a side product of the Hancock Company, it being designed to overcome objections existing in types previously in use. By scheming to reduce friction and valve losses to a minimum, it is declared that a greater volume of air can be pumped to a given pressure with less effort than is required for the operation of any other pump made. Moreover, special thought has been devoted to the working out of such details as will insure its remaining in order for the greatest possible period without adjustment, cleaning or repair. This is fortunate since lack of stability and good design is bound to make for more than a little dissatisfaction in this zone of activity.

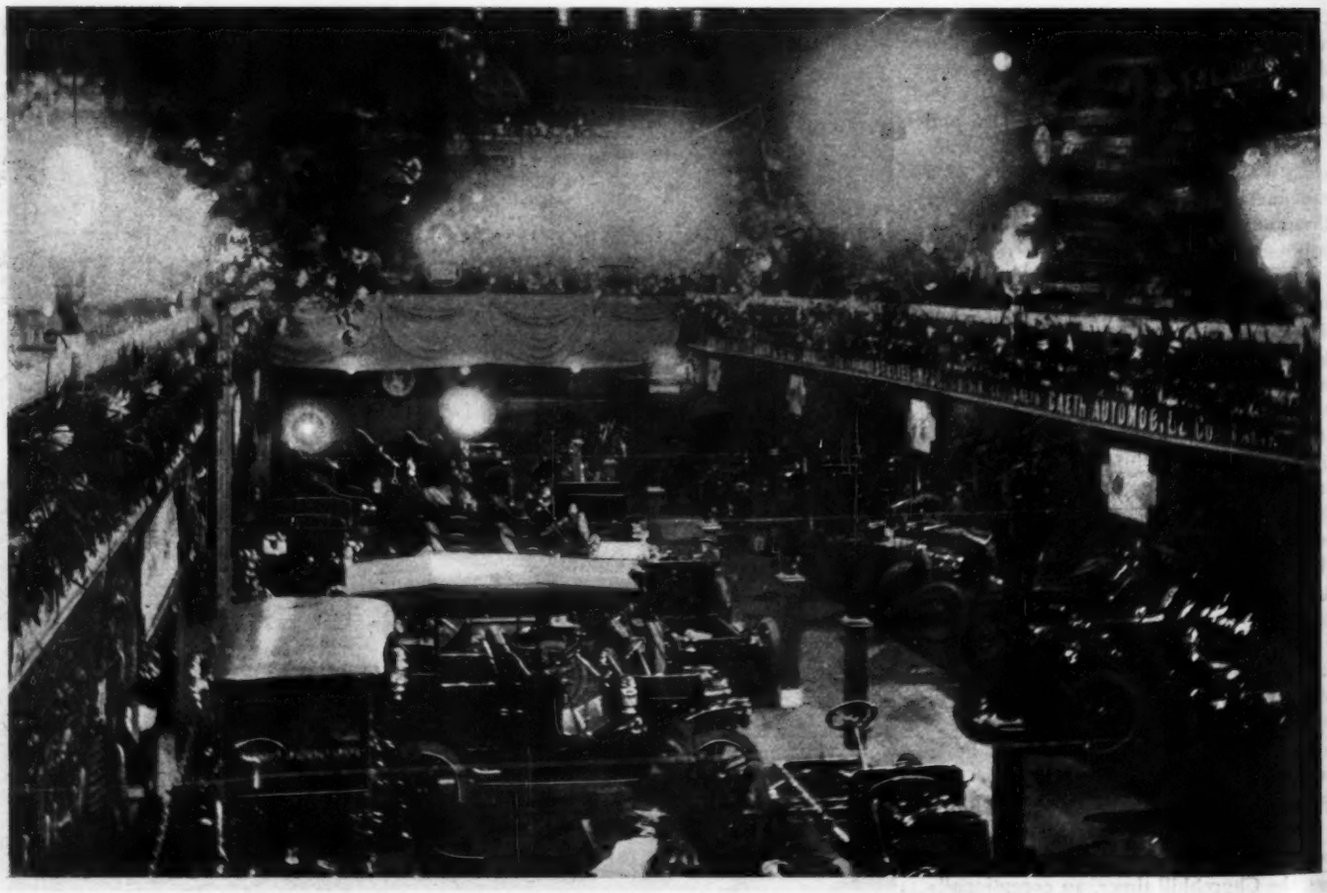


Cadillac with Individual, Copper-Jacketed Cylinders.



Toledo Chassis in Which Chrome Nickel Steel Abounds.

First Regiment Armory, Where Photographing Was Most Difficult and Unsatisfactory.



Another General View in the First Regiment Armory From a Somewhat Different Angle.

Imperial Brass Mfg. Co., Chicago, is demonstrating at its stand a new compression coupling for gasoline and oil lines which is of unprecedented simplicity and security. Each normal coupling consists of five parts—a central member, two tapered sleeves and two nuts. The central part is counterbored to receive the pipe ends, and the nuts, each of which contains one of the sleeves, are placed on the pipes before they are entered into the center part. Then, by screwing the nuts up, the tapered members wedge into the pipe in such a manner as to form in it an annular constriction, very slight, but ample to prevent separation and leakage. Besides in the form of plain couplings this connection is regularly furnished in the forms of elbows, tees, check valves, etc., in at least five different sizes. The manufacture of many other small articles in the way of turned and stamped brasswork and the like is the business of this concern, and the display at the stand of many such articles that have been made to customer's orders is most informing.

Long Mfg. Co., Chicago, though the originators of the much-used helically finned radiator tube, has added to its product conventional lines of flat tubes and cellular radiators. These latter are said to be the only ones made that can be repaired with ordinary soldering facilities. An interesting feature of this company's product is the great capacity of some of the truck and rail motor-car radiators it has turned out. A unique distinction enjoyed by its ingenious "spiral-tube" construction has been its use for years in the condensers of the White steam cars, in which the requirements are in some respects materially more severe than in ordinary radiators for gasoline engine cooling. The tables of sizes, capacities, cooling areas, etc., which occupy considerable space in the Long catalogue is a bit of engineering enterprise, the imitation of which is to be commended to competitors. In addition to radiators, hoods and sheet-metal fenders are made by this concern.

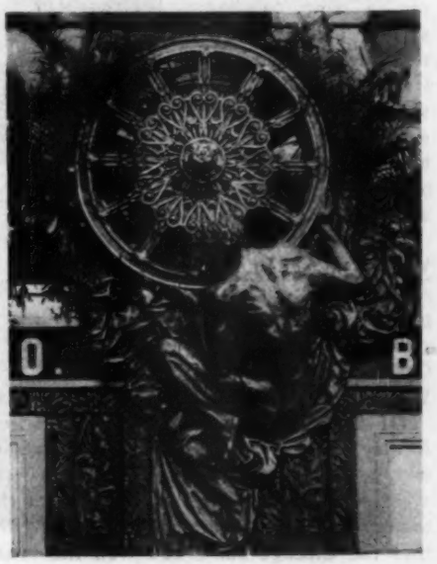
Pfanstiehl Electrical Laboratory North Chicago, offers a "fool-proof" vibrator as one of the talking points of this year's Pfanstiehl coils, and if any about a car needs to be fool-proof it certainly will be admitted that this much abused detail is a foremost candidate. By designing for extreme high speed of the trembler blade, by eliminating movement of the platinum-iridium contact points as a means of adjustment, and by unprecedentedly close relation of condenser capacity, it is made impossible even by the most reckless tinkering to make the current consumption fall lower than 1-4 ampere or rise above 1 1-4 amperes on closed circuit—equivalent, of course, to much less when the engine is running. An improved lock switch is fitted to each coil box, in which the coils are assembled on the popular unit system. Non-vibrator, marine and motorcycle coils are also manufactured.

Universal Tire Protector Company, Angola, Ind., presents some of the most interesting of the Western devices in the way of ingenious and original solutions of the tire problem. Most radical is its emergency tire sleeve—in a way similar to the old blowout manchons—but it is made of metal-studded chrome leather and provided with a decided novelty in the form of a positive and adjustable mechanical anchorage, constituted of a pair of sheet-metal boxes containing double ratchet devices whereby the straps that hold the sleeve in place can be drawn to any desired tightness. Steel side bars distribute the pull along the sides of the sleeve. Advantages over laced-on sleeves, drawn tight only by subsequent inflation of the tire, are apparent. Moreover, new sleeves can be fitted to the anchorage at lower costs than prevail with laced-on types. Besides their blowout sleeves, this company is in the field with a new metal-studded tire protector, differing from others of its kind chiefly in the provision of mechanical anchorage. By applying it to deflated tire, drawing it up as tightly as possible by the ratchet-edge bands and then inflating the tire, a degree of tension not realizable by the more common method of inflation alone is attained, with consequent laying of the chief bugbear of similar devices—their tendency to work and creep on the tire.

Twentieth Century Motor Car Co., South Bend, Ind., makers of Williams' divided wind shields, are showing a thoroughly standardized product, capable of application to any type of car, and of somewhat unusual merit in that it can be set in three different positions — "down," "straight up" and "forward." The down positions is with the upper half of the glass slightly lowered and to the rear of its normal place on top of the lower half, in which condition it permits raising or lowering of a cape hood. Nor does its manipulation require the dismounting of the side lamps. The so-called forward position is a new one, in which both parts of the glass are inclined, the upper slightly ahead of the lower and with an open space between. This gives ventilation, yet prevents the entry of bugs, dust and rain. The straight-up is, of course, the normal position. When the shield is not desired, it can be folded completely down to a horizontal position forward from the dashboard.

Triple Action Spring Company, Chicago, whose helical springs, in conjunction with scroll attachments have been a standby for several years past, are more added to in styles than changed in principle in this year's product. One new detail, however, is the use of a link in a very ingenious way for the purpose of stopping side motion. It seems well established that springs of this character, properly applied in connection with the stock-plate springs of a car, and correctly proportioned to the work that will devolve upon them, exercise a most marked effect in reducing spring breakage and conducing to ease of riding.

Vivax Storage Battery Company, Chicago, is convincing many of the merits of its excellent line. A feature of the Vivax batteries is the grids and plates, which is of a design exclusive with this concern, and which is so formed as to reduce to a minimum the common tendency for the active material to work out and cause short-circuiting, loss of capacity, etc. Another point upon which stress is laid is the reinforcement of the jars, which are specially strengthened at points most subject to strain. Unusual ingenuity has been expended in working out the details of venting and sealing, and as a final protection against leakage and injury every battery is sold in a paraffine-proofed oak case. Every size up to the 8-volt, 60-ampere hour type is made. Also, an important part of the business is the supplying of any and every combination of cells that can be used in the propulsion of electric vehicles. Another specialty is a novel rheostat charging set. On the whole the "Vivax" stands for real improvement in storage battery work in divers ways, amongst which will be noticed the ease with which the battery can be maintained, and the fact that it is not prone to fail in service, or become difficult to charge, when, in the course of events charging becomes necessary.



GENERAL GOSSIP OF THE BIG SHOW

Gladiators Attracted the Throngs.—At the Locomobile stand the Vanderbilt Cup winner and the trophy itself proved a pair that commanded attention, while at the Thomas exhibit the interest was no less pronounced in the "Round-the-World" car which put it all over the foreigners in that spectacular event.

Manager Miles Lucky to Have Fest.—A cold that settled in his throat put Manager S. A. Miles more or less out of the running before and during the early part of show week, and as a sequence L. L. Fest, the assistant manager, had to be at the exhibition helm much of the time. As one man remarked, "Miles was lucky to have Fest on the job," for the assistant met the requirements most adequately. At times it required fast going.

Racing Still Attracts.—There is no doubt whatever as to a continued interest in high speed contests. A. R. Pardington of the Long Island Motor Parkway was in evidence in the early part of the show before he went to Mount Clemens for a bit of rest, and the many inquiries aimed at him told a story of this desire by not a few to have some big events in the metropolitan district. "Pardy" answered all queries successfully, and one hopes his optimism will become true in the early spring.

Where the Central Lateral Aisle Divides the Coliseum.

Woods Company's Good Smoker.—Wednesday night the Woods smoker and Dutch luncheon, at the new and completely equipped factory on Calumet avenue, helped to keep many a pleased show participant out of his bed until an early hour. The vaudeville was unusually good. The master of ceremonies was Carl Metzger, who is greatly responsible for the innumerable Woods electrics about the streets of Chicago.

Of Course Reeves Was There.—No matter when or where it may take place there will be always found at any notable automobile event the indomitable and ever-busy Alfred Reeves, whose success with the management of the A. M. C. M. A. is a story known to all automobiling. Mr. Reeves frankly admitted that the Chicago show had won the medal on decorations.

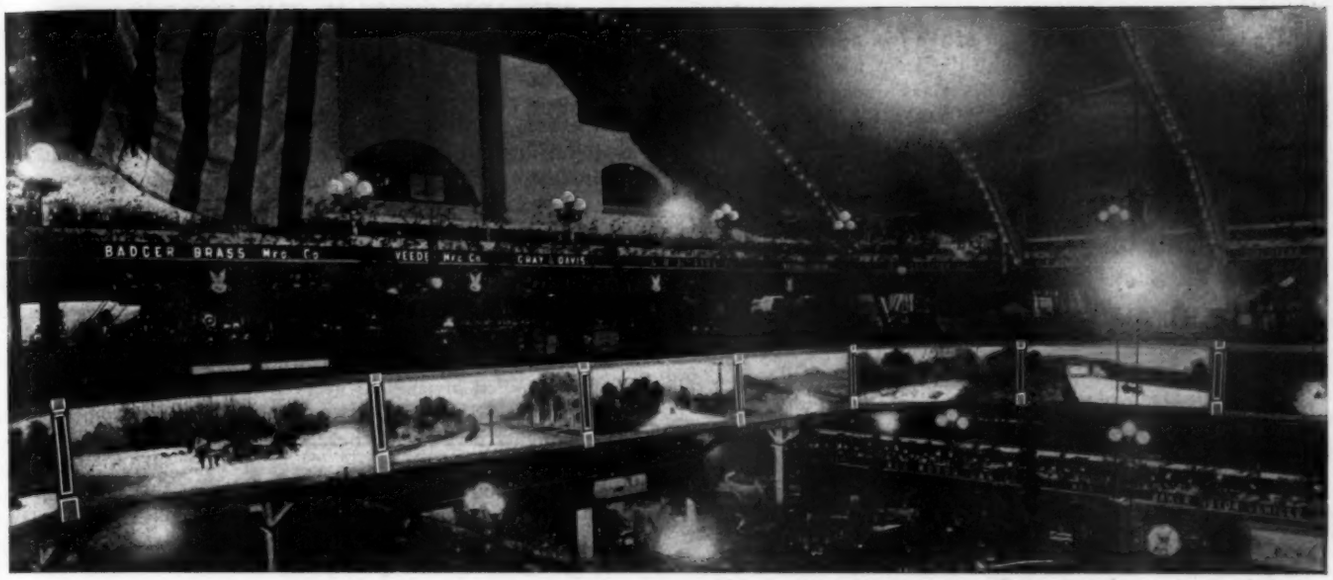
"Van" Selling the Knox.—One of the most visited stands was that of the Knox, the Chicago branch of which is now under the management of N. H. Van Sicklen, veteran of two industries, but until recently always in the publishing field. "Van" takes to the selling of cars as naturally as he did to looking after the business destinies of *Bearings* and later of *Motor Age*, which means that there will be many Knox cars in and about Chicago very soon.

Among Those Present. — The list was a long one of the notables of the industry. For instance, one trio would include "Joe" Tracy, widely known for past racing prowess; Otto Nestman, an early Stevens-Duryea performer and now with its Omaha agency; and "Teddy" Dey, the Pierce pilot of Glidden tour fame.

Maxwellites Have a Dinner.—As usual the Maxwell-Briscoe Company entertained its agents at the show with a dinner, this taking place to-night at the Auditorium. Many were present from some distance.

Route of the Glidden Tour.—This is a question that cannot be answered at present. Chairman F. B. Hower is besieged with delegations and letters. One idea that is finding favor is Chicago to Milwaukee, to Minneapolis-St. Paul, and to Denver, with a return taking in Kansas City, St. Louis, and Indianapolis. There is much sentiment for a start in Detroit. Whatever the route, there will be heartburnings.

Annual of Chicago's Trade Association.—As a sort of a preliminary to the Chicago show, the Chicago Automobile Trade Association held its third annual banquet Friday night at the Chicago Automobile Club, which was attended by 60 tradesmen, within 10 of the full membership of the association. It wasn't all trade talk at the dinner, though among the speakers being Ira M. Cobe, president of the Chicago Automobile Club; John Farson, ex-president of the Chicago Automobile Club, and Alderman Milton J. Foreman, who also is an enthusiastic autoist. The tradesmen were represented in the talkfest by Thomas J.



Where the Accessory Exhibits Were Located in the Coliseum Mid Flag-Draped Galleries.

Hay, the Ford branch manager; Ralph Temple, the Jackson agent; Charles E. Gregory, representing the taxicab interests, and Joseph F. Gunther, of the Apperson agency. Walter Githens, president of the trade association, was toastmaster. The affair was given added importance by the announcement of Mr. Cobe of his tender to the A. A. A. of a trophy for the national stock chassis race. Alderman Foreman made a witty speech, in which he declared the motor car was revolutionizing the world and told how strong it was with the city administration. Speaking of road racing, he declared he was greatly interested in it; that he saw lots of road racing right on Michigan avenue.

Moline Farmer's Interchangeable.—The Moline Automobile Company, of East Moline, Ills., has designed and built a car particularly for the farmer. This is the new Moline Model H, which sells for $1,500. It has a road clearance of 14 inches, when equipped with a double side-chain drive, and has a detachable tonneau, making the rear deck available for carrying purposes when the seats are removed. "The farmers of the Middle West have not been slow to realize the value of such a car," says W. H. Vandervoort, sales-manager of the Moline Company, "and we are having a splendid success with the new Model H. For city use, we equip the same car with a shaft drive. 'The Automobile on the Farm' is the title of a booklet describing the machine in detail, which we have been sending out broadcast." In addition to its complete line at the Coliseum, the Moline Company will hold an overflow show at its Chicago salesrooms, 1220 Michigan avenue.

One of the Latest Franklin Ideas.—One interior-driven motor car is to be shown by the Franklin Company among its 1909 models. This is an 18-horsepower brougham, built upon the same chassis as the Franklin touring car of the same power. It is an adaptation of the doctor's closed carriage and is made to suit those people who insist upon the comfort and protection of a closed carriage and who yet want to do their own driving. It carries two people. The finish is in Franklin standard colors. The trimming of the interior is of goatskin with blue broad lace. The appointments are simple, as this class of motor car is made to specially meet the requirements of the business and profes-

Mural Decorations Waylaid the Eye Approaching the Galleries Where the Accessory Displays Were Massed.

sional man, and the need is for good service under hard usage. There is a small front extension of the top, affording protection when the car is being driven with the front window partly open, and this in addition protects the glass during severe storms. All the glass frames are made to either fold up or drop into grooves. These frames are of mahogany of natural finish. The mudguards are of the conventional long curved pattern. A rear guard is made with the wing on the inside to thoroughly protect the body. The use of an ample chassis permits provision at the rear for a good sized receptacle.

DETROIT AUTO SHOW OPENS NEXT WEEK.

DETROIT, Feb. 8.—Next Monday evening Detroit's "biggest little" automobile show will be thrown open to the public, and local enthusiasts will be given their first opportunity to inspect all the new models under one roof. The members of the Detroit Automobile Dealers' Association, who organized the show, say that the time-honored term "biggest little" no longer expresses the situation accurately. In proof that the show is not little, they assert that there will be upward of 200 cars on the two floors of the Wayne Casino, in addition to the latest in commercial vehicles and motorcycles.

The scheme of decorations includes the conversion of the lower floor into a Venetian garden, where hundreds of canaries will provide music, in addition to a large orchestra. More than a score of immense landscape paintings will form the background. The list of exhibitors follows:

Automobile Dealers.—American Electric Auto Co.; Anderson Carriage Co.; Ashley Pond, Jr.; J. H. Brady Auto Co.; Brush Runabout Co.; Buick Motor Co.; Cadillac Motor Car Co.; Cartercar Co., Pontiac, Mich.; Coombs & Gilmour; Everitt-Metzger-Flanders Co.; C. B. Fear Auto Co.; Ford Motor Co.; Grant Bros.; Hupp Motor Co.; W. G. Isbell; J. B. McIntosh; Maxwell-Briscoe-McLeod Co.; Wm. Neuman & Co.; Olds Motor Works; Postal & Doherty; Rapid Motor Vehicle Co., Pontiac, Mich.; Rumsey Electric Co.; J. P. Schneider; Seidler-Miner Automobile Co.; Seitz Auto & Transmission Co.; Standard Auto Co.; H. H. Thorpe; Winton Motor Carriage Co.

Accessory Dealers.—Auto Accessories Manufacturing Co.; Auto Equipment Co.; H. W. Brown; Gemmer Manufacturing Co.; General Sales Co.; Gisholt Machine Co., Madison, Wis.; H. W. Johns-Manville Co.; Fred Kicherer; Martin Meier & Co.; W. E. Metzger; Michigan Storage Battery Co.; Miller Storage Battery Co.; Modern Machinery and Engineering Co., Cleveland, Ohio; New Process Steel Co., Marshall, Mich.; Rochford Mfg. Co., Chicago, Ill.; J. B. Trossell; United States Spare Wheel Co.; Wm. E. Wandersee; Wayne Chemical Co.; Westinghouse Co.

MILWAUKEE SHOW MAKES PREPARATIONS.

MILWAUKEE, WIS., Feb. 8.—The first annual show of the Milwaukee Automobile Club will be held in the Hippodrome from March 11 to 13, and the club members are waxing very enthusiastic over the plans. Clarke S. Drake, president of the club, has been appointed general manager and is carrying the arrangements along at a pace that will insure results.

The main floor of the big building will be used for exhibits of cars and the galleries for accessories, parts and tires. Each exhibitor must show at least two cars or chasses for the space assigned him. Allotments will be made by drawing on February 15. The club will furnish all signs and decorations, to insure uniformity and a harmonious scheme.

MONTREAL CLUB TO HOLD AUTOMOBILE SHOW.

MONTREAL, CAN., Feb. 8.—Although it has generally been understood that there would be only one automobile show in Canada this year, and that in Toronto, the Automobile Club of Canada at its meeting last Saturday arranged to hold another show some time in April. It is considered that the date of the Toronto show is entirely too early. The club has also invited the mayors of the municipalities along the Lake Shore road to a meeting next Thursday, at which they will consider how to avoid any inconvenience from the use of automobiles on the driveway.

NEWARK SHOW IN THE FOREGROUND.

NEWARK, N. J., Feb. 8.—In view of the large list of the most representative companies who have signaled a willingness to render support to the enterprise, and in further view of the fact that every one in Newark is awakening to the fact that the industry is thoroughly represented there, it will come as no surprise to the well informed of the industry to learn that the entire available space has been assigned, barring room for a couple of cars and some accessories.

The undertaking is a big one, and in view of the fact that opening night is less than two weeks away, it is plain to be seen that a little "ginger" will have to be injected into the workers, a supply of which is bound to rest in the maw of the management, evidences of which are bound up in energy which is spilled lavishly in every direction savoring of good.

There will be so many "special nights" that the opening and closing nights may be the only regular sessions. At all events, the present outlook includes "Essex Troop" night, New Jersey Automobile and Motor Club night, etc., and enthusiasm runs high, particularly in view of the splendid display which is all that can happen in view of the list of exhibitors as they are here given.

Concern.	Car.
The White Co.	White.
Ellis Motor Car Co.	Pierce-Arrow.
Paddock-Zusi Motor Car Co.	Chalmers-Detroit.
Motor Car Co. of New Jersey	Cadillac.
H. J. Koehler	E. M. F.
J. W. Mason	Maxwell.
Greene Motor Car Co.	Locomobile.
Carl H. Page & Co.	Peerless.
F. L. C. Martin Auto Co.	Mitchell.
O'Neil Motor Car Co.	Reo and Premier.
D. B. Dunham & Son	Auto bodies.
Brush-McLaren Motor Co.	Brush.
Weldon & Bauer Co.	National and Kissel Kar.
Cordner, Flinn & Toppin	Acme.
Overland Motor Car Co. of N. J.	Overland.
Crawford Auto Co.	Crawford.
Oldsmobile Co. of New York	Oldsmobile.
Rickey Machine Co.	Marmon.
A. G. Spalding & Bros.	Stevens-Duryea.
Rambler Auto Co. of N. J.	Rambler.
Atlantic Motor Car Co. of N. J.	Stoddard-Dayton.
J. M. Quinby & Co.	Isotta and Pennsylvania

ACCESSORIES.

Concern.	Address.
National Oil and Supply Co.	Harrison.
The Adolph Karl & Co.	Permanit.
Union Battery Co.	Belleville.
N. Y. Auto Top and Supply Co.	Newark.
Empire Tire and Supply Co.	Newark.
Electrical Maintenance and Repair Co.	Newark.
Perfection Wrench Co.	Portchester, N. Y.
H. J. Koehler Sporting Goods Co.	Newark.
Orange Machine Co.	Orange.
W. S. Sheppard	Newark.
Dayton Rubber Manufacturing Co.	New York.
B. F. Howard, Motorcycles	Verona.
Standard Oil Co.	Newark.
Standard Leather Washer Mfg. Co.	Newark.
Hydro Carbob and Machine Co.	Newark.
Auto Tire and Repair Co.	Newark.
Welsh Grape Juice Co.	New York.
Ennis Rubber Manufacturing Co.	Newark.

INDIANAPOLIS DEALERS' WEEK, MARCH 22-28.

INDIANAPOLIS, IND., Feb. 8.—Plans for the largest celebration automobile men have ever had in the city are being arranged by the Automobile Club of Indiana. The Indianapolis Automobile Trade Association, under whose auspices such affairs were formerly conducted, was recently consolidated with the club.

An opening week will be observed from March 22-28, and during the week a number of interesting events will take place. These will include a parade on the opening day of the week, in which owners, dealers and manufacturers will participate. On following days will be given a banquet, endurance contests, novelty races and a hill climb.

Throughout the week each dealer will exhibit 1909 models in his own establishment, and the show rooms will be attractively decorated. The committee making arrangements for the week is composed of F. I. Willis, of the Hearsey-Willis Company; Frank Moore, of the Fisher Automobile Company; B. W. Twyman, of the Motor Car Sales Company; D. B. Sullivan, of the Sullivan Automobile Company, and Cecil E. Gibson, of the Gibson Automobile Company.

TECHNICAL ADVANTAGES OF UNDERSLUNG CHASSIS

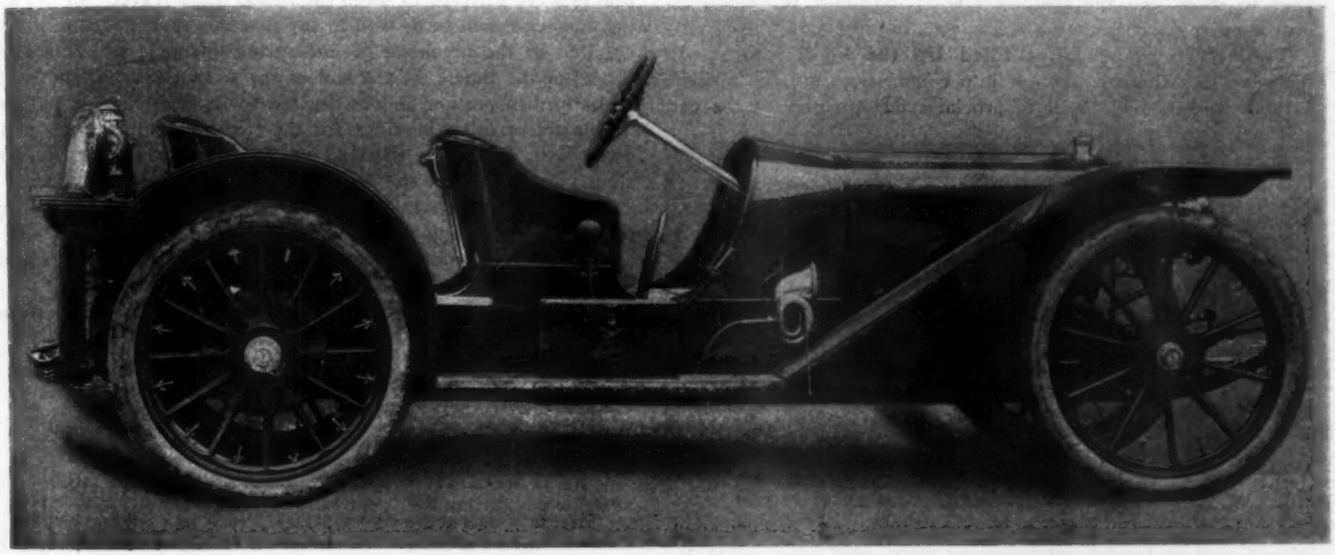
By CHAS. E. DURYEA, Technical Expert, A. M. C. M. A.

ONE of the "stylish" features of the earlier types of autos was the high position of the body and riders, but as the purchasers became better acquainted with the speeds possible by the new vehicle, they saw the advantage of low center of gravity, and makers have been each year catering more and more to the demand for low-built rigs. The ability of the vehicle and the comfort of the passengers are both increased in many respects by low mounting, although, of course, some other desirable features are lost. The low vehicle is safer and less likely to overturn as the result of a skid or in case of running into a ditch, curb., etc. It offers less wind resistance and so is more pleasant to ride in at speed. On roads that are not perfect the side swaying is less because of the lessened radius, which adds very materially to the comfort of the passengers. The strains on the wheels in turning or on sloping roads are less. Mounting and dismounting are handier and easier. With no horse in front and continuous guards from one end to the other and one side to the opposite, there is no need to sit high to escape the mud and other undesirable things found near the ground. With high speed there is no need to take the other fellow's dust very long, so even this reason for sitting high is absent. The ability to see is less and the appearance is not so impressive, but these decidedly horsey features are small loss compared with the many gains.

Low Center of Gravity Desirable.—For years low center of gravity with these advantages has been advocated by leaders, but makers found it difficult to comply fully. The complicated mechanism of the past required all the room available under the floor of the vehicle, and it seemed easier to mount the passengers high than to adapt the motors to the proferred low body arrangement. With the moving of the motors to the front the one great obstacle has been eliminated and the conventional auto now has its floor but little above the crankshaft level of the motor. The steady increase in wheel sizes had its effect also, for axles must have room to rise, and until the foreign makers set the pace American makers were many against changes of frame which would permit low carrying of the passengers and also large wheels.

Merit, being immortal, finally won, and to-day we find practically all makers of the larger and speedier vehicles using 36-inch wheels, while some like the Gaeth and the American Traveler have wheels as large as 38 and 40 inches. To permit this practice a great number of the frames of the chasses are dropped or curved, so as to be low between the wheels while rising high over the rear axle or from in front of the rear axle to the full rear. This type of frame is found on the American Simplex, the Midland, the Marmon, the Mora, the Moon, the National, the Pennsylvania, the Regal, the Pullman and the Welch cars in some or all of their models.

Natural Advantages of the Underslung Frame.—On the American cars the problem is worked out to the fullest by carrying the frame under the axles and springs, producing what is undoubtedly the lowest center of gravity vehicle in the automobile trade. There is, of course, no mechanical reason against such hanging, and the spring action cannot be other than excellent. The added comfort and safety at speed must be very evident and the style of the workmanship as well as the originality of design make this departure well worthy of study. As the needs of the various types of buyers become better known to the makers and to the buyers themselves, special features securing valuable results not secured by the average type of construction will become more common, and makers will gain for themselves a class of followers by this specialization that will take their product without the necessity of keen competition, as must result if the market for average goods is overfilled.



American Roadster, Showing the Underslung Frame Construction with Wheel Diameters for Adequate Road Clearance.

Not only are autos designed with fewer parts, but the parts are better protected from the mud and dust, so the low-hung chassis is not objectionable, while as roads become better each year the necessity for clearance is becoming less. Racing autos have long been built on these lines and the builders who copy them are but following the lessons taught on the track and course.

AERONAUTICAL NOTES FROM GERMANY.

Berlin, Feb. 1.—Two new German airships are rapidly nearing completion, the one being the work of the celebrated Duerkopp firm and fitted with two motors, while the other is being built by the well-known engineer, Dr. Huth, on the three-decker principle. Trials will be made with both early in the Spring.

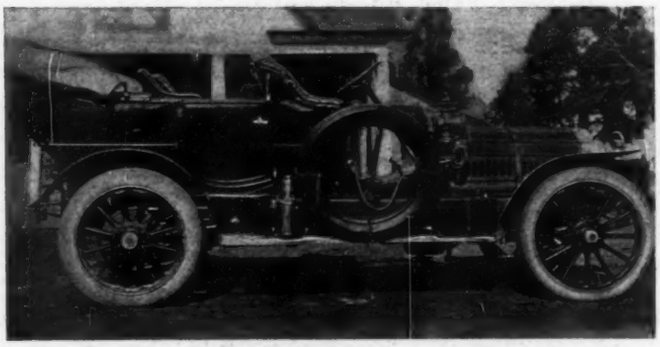
The vicinity of Zurich will be the start of the next Aero Gordon Bennett event, which the Swiss Aero Club now has to arrange. Entries for the race, which will take place about the end of September, close on March 15.

CONCLUSIVE EVIDENCE OF AUTOMOBILE ECONOMY

29,000 miles at a cost of $90 is the upkeep record of one automobile and it is probably one of the most interesting facts which ever come to the surface. In view of the fact that the earlier records of cost of maintenance were sometimes quite high, and in further view of the proneness of men to mention the things which impress them most, it generally happens that the cars which went about their business failed to receive mention, while the cars which run up a repair bill were mentioned in song and story time and again.

When an authentic record such as this is open to inspection then it belongs to the class of incidents which entitles it to space—nay, preferred space, which in a newspaper is reserved for the matters that compel respect. In this case W. L. Lewis pleaded guilty to having engaged a good chauffeur for his Thomas car—a regular stock four-cylinder sixty—and that he would know something about the cost of maintenance it was his custom to "count the cost." That the chauffeur, A. Douglass, did influence the situation in favor of good performance merely goes to show that the cost of a good chauffeur is by way of insurance of the character which weighs heavily in favor.

Twelve Thousand Miles Piled Up the First Season.—In the year 1907 the car was put into commission and the mileage as above given made bold to proclaim the qualities of the car,



W. L. Lewis's 60-H.P. Thomas Always Ready to Run.

especially in view of the fact that each additional day lent confidence, and of service interruptions there was none, while the cost, as it was computed at the end of the season's service went to cover "precautions" to a large extent, although it is true that prudence dictated that the motor bearings be adjusted for slight wear, then it was desired to retain the noiseless performance of the car which was done at the expense of a new set of sprockets; moreover, in going over the car very carefully it was considered that the front wheel bearings were slack and replaced.

With the season over, the chauffeur went over the car with the care born of much skill and a desire to distinguish himself from the class of men who pretend to be competent, but who fail to make good, with the result that the motor was carefully overhauled, the cylinders were cleaned out, valves ground to a tight seat, oiling system overhauled, piping gone over, etc., thus rendering the motor as "sweet" running as the day it came from the maker. Likewise, the clutch was treated, not that it absolutely required attention, but the chauffeur went into the matter in a way to prove that it really does pay to have a good man, even at the cost. With the transmission up to a fitting standard, the car as a whole as clean as a whistle, the first year of service footed, in point of cost, up to the following:

SUMMARY OF FIRST YEAR'S COST OF REPAIRS.

New set of sprockets	$30
Front wheel roller bearings	10
Total	$40

Considering the fact that the first year's service was largely in the winter time (the winter of 1908), it will be rendered quite plain that the cost was very low, indeed, and it was expected that something by way of an increase would be rendered manifest within the distance of travel of a few thousand miles when the car was put back to work in the Summer of 1908.

Seventeen Thousand Miles Was Made the Second Season.—Despite the arduous service of the first year the car exhibited rare touring qualities during the last year, in which the mileage exceeded the first year by 5,000 miles, and at the close of the season it was decided to give the car the benefit of a good overhauling, which the chauffeur undertook and carried it to a successful termination. The same man did all the work from the start, and it is interesting to note that in making repairs, while he did replace parts much the worse for wear, the fact remains that he made adjustments rather than replacements in nine cases out of ten, thus showing that it is not necessary to go to great expense in many cases, if only the chauffeur is competent.

With an idea of showing the extent of the service it will be pointed out that the brake drums on the rear road wheels had to be turned down (trued up), because of the amount of work the brakes were suffered to do in the 29,000 miles travel. Before going farther it will be as well to say that this same arduous service resulted in the breakage of one spring (front), which was replaced at the time. At the end of the second year, as the result of careful inspection, it was decided to replace parts as follows:

One set of roller bearings for the steering gear in order to do away with some lost motion, which is so undesirable, even if slight, as to warrant the cost of doing away with it.

One set of camshaft bearings in order to bring the motor up to the sweet running condition which obtained at the start.

One pump gear, which was considered below a fitting standard, but not of necessity gone.

All the replacements of the second season run into costs as follows:

SUMMARY OF THE SECOND YEAR'S COST OF REPAIRS.

Front spring	$18
Roller bearings, camshaft bearings and pump gear	30
Extra spring clips	2
Total	$50

RECAPITULATION OF ALL COSTS FOR 29,000 MILES.

Paid out during first year	$40
Paid out during second year	50
Paid out total	$90

It will be observed that the whole performance showed that the car did not get into serious trouble at any time, and it is true as well that the repairs made could be far more expensive in the absence of a man who saved the situation. The incidental costs of running the car were very fair, indeed, in that besides $0.0031 per mile, cost of repairs, the gasoline bill was on a basis of 11 to 12 miles per gallon, while the lubricating oil bill footed up on a basis of 150 to 160 miles per gallon. On a few occasions the lubricating bill fell off to 200 miles per gallon, but the average was as above given.

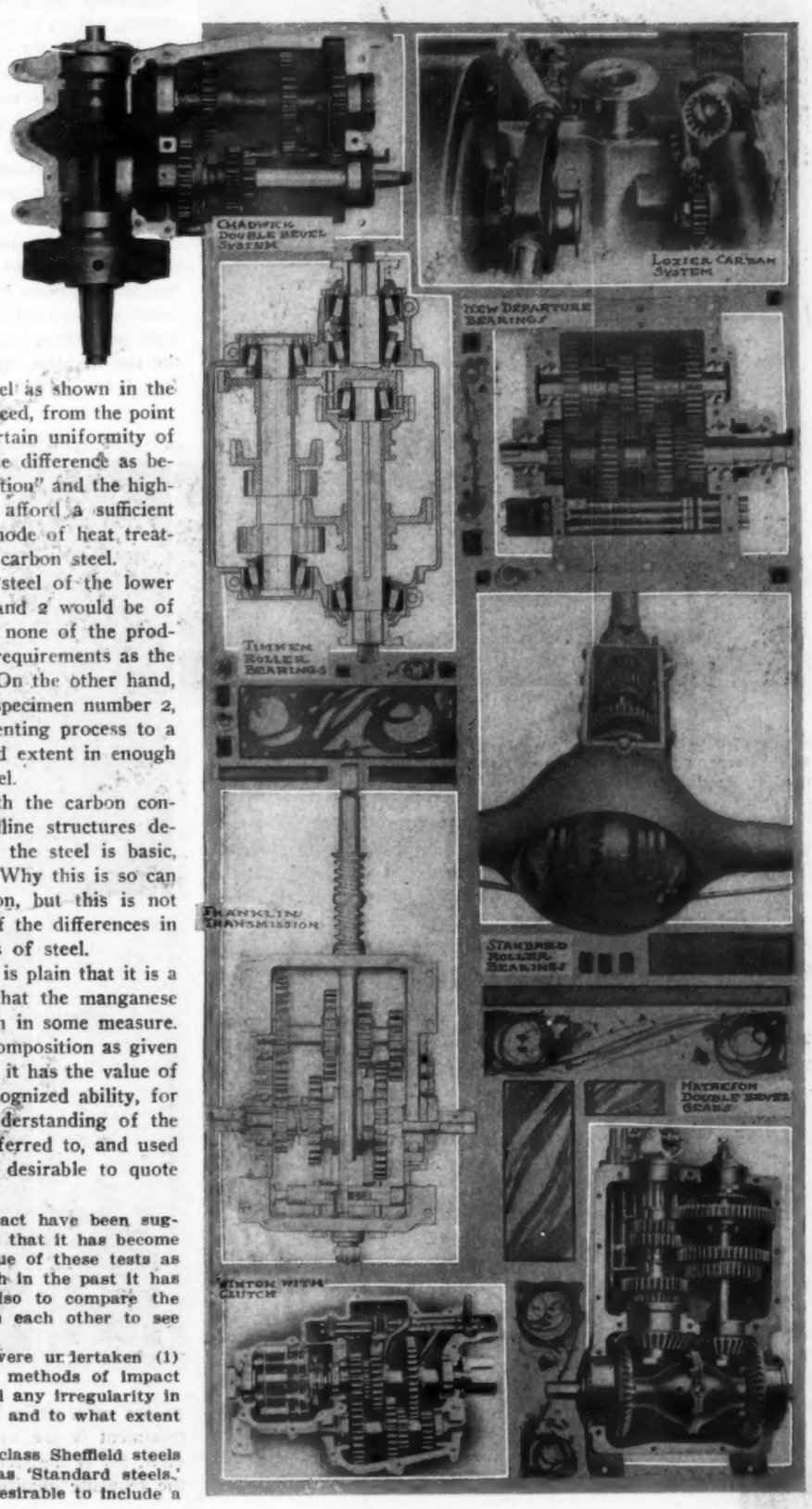
The question of the tires is one which will have to be dealt with in a general way, but it is fair to say that the front tires run fully 5,000 miles, while the rear tires lasted for 4,000 miles at least. The rear tires were made to do additional duty by retreading, and the tire repairs were well attended to in the main. On the whole, it is fair to say that much of the good performance was due to the fact that "a stitch in time saves nine" and the chauffeur was alive to the fact.

As a fair indication of the system used in connection with the up-keep of the car it is only necessary to relate that the connecting rods were examined and taken up, if necessary, every 5,000 miles, while the valves were ground in every 6,000 miles, and the brakebands received attention every 7,000 miles, and so on. There was a set time for the performance of each of the duties, and while it was not always necessary to do work, it was considered desirable to examine into the condition which obtained and by so doing ascertain if aught was awry.

TREND IN TRANSMISSION PRACTICE

By Thos. J. Fay. Chapter II

UNDER the circumstances, if carbon steel is to be used of grades higher in carbon than the composition which will admit of case-hardening, the carbon must be high enough to engender the requisite surface hardness as the result of quenching and tempering, in the absence of the carbonizing process. That the carbon must be much above the point as above given for cementing steel is assured, an illustration of which was given.



Without going into the question of the results due to further heat treatment, at this time, it is to point out that the safe limit for carbon content is fairly represented in the range given, and if the steel as shown in the test is in the best state to which is can be reduced, from the point of view of "normal steel," or if there is a certain uniformity of degrees of superiority, then it is plain that the difference as between carbon low enough to allow of "cementation" and the highest carbon content recorded above does not afford a sufficient difference to render it clear that any other mode of heat treatment will suffice for the purpose, considering carbon steel.

By cementing (in a suitable manner) the steel of the lower carbon, including the specimens, numbers 1 and 2 would be of such strength as to serve for gears, whereas none of the products given would develop strength up to the requirements as the result of any other form of heat treatment. On the other hand, with the carbon content above that given in specimen number 2, a crystalline structure would follow the cementing process to a certain extent in every case, and to a marked extent in enough cases to spell failure for the users of the steel.

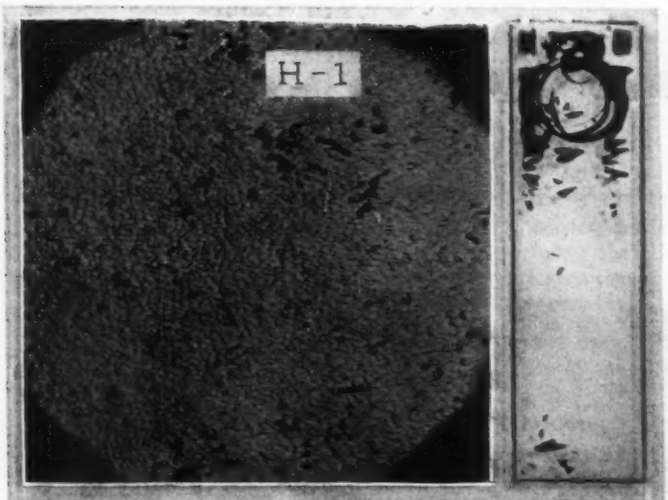
It is especially noticeable that in steel with the carbon content between 20 and about 28 points, crystalline structures develop in the cementing process, especially if the steel is basic, more particularly if it is Bessemer as well. Why this is so can be explained to a fair degree of satisfaction, but this is not the time to launch into the broad question of the differences in the several qualities of the respective grades of steel.

In the steel as given in the tables above, it is plain that it is a fairly pure product in the main, excepting that the manganese is quite high, which accounts for the strength in some measure. It is not the purpose here to claim that the composition as given is absolutely the best to be had for gears, but it has the value of having been selected by a metallurgist of recognized ability, for test purposes. With a view to a better understanding of the manner in which the products given were referred to, and used in the tests by W. F. Harboard, it will be desirable to quote from the paper, as read by him, as follows:

"So many methods of testing steel by impact have been suggested by engineers during the ast few years that it has become a matter of importance to investigate the value of these tests as compared with the ordinary tensile tests which in the past it has been customary to rely upon largely, and also to compare the better-known methods of impact testing with each other to see which gives the most concordant results.

"The experiments recorded in this paper were undertaken (1) to compare the results obtained by different methods of impact testing; (2) to see whether such tests detected any irregularity in steel not revealed by the ordinary tensile tests, and to what extent they were in agreement with the latter.

"With this object in view three very high-class Sheffield steels were originally selected, and are referred to as 'Standard steels,' but as the work proceeded it was considered desirable to include a



series of steels made by the Acid Bessemer, Acid Open-Hearth, Basic Bessemer and Basic Open-Hearth processes, so that all steels used by engineers for structural and railway work could be considered.

The acid open-hearth steel as referred to in this discussion was selected for the purpose of determining as to the mode of fixing the effect of "impact" induced in divers way, and that the steel is a fair selection can be taken for granted. In this connection it may be well to point out that "clash gears" are subject to impact to a vast extent, moreover bending moments are predominant to an extent which ofttimes makes for a near approach to the elastic limit.

There is no doubt of the ability of carbon steel, low in carbon (cemented), to serve well for the purpose, if the material is of the acid open-hearth genera, well fabricated, or if the steel is of the crucible process, and comes from "cut" or "cement bars," not of the basic process. If Bessemer steel is used in the crucible charge it is extremely difficult to see wherein the resultant crucible steel is to take rank with acid open-hearth steel, if the composition of the same is low in the metalloids and otherwise unsuited to the work to be done.

In general, according to the methods of reasoning as here utilized, there are two prime considerations: (a) the steel, no matter what the composition, should be from selected ore and scrap, reduced by the acid process; (b) the carbon content should be such as to render the "cementing process" necessary and practicable. These prime considerations take into account the use of the steel in gears, to be used as sliding gears, in automobile work. When opportunity affords, it will be the aim to show that tests are frequently quite unreliable, especially shock or impact tests, whereas none who have had wide experience will be willing to assert that increasing carbon will have any other effect than to decrease ductility, which is most undesirable.

Referring to a long series of carefully conducted tests, using all the known methods of ascertaining the shock ability of special and commercial steels, Harboard ended by saying: "The results cannot be regarded as anything but most unsatisfactory, as there can be no question that as the percentage of carbon increases the ductility decreases." There are many cases of record in which attempts have been made to render inferior carbon steel suitable for use in exacting work. That such attempts have been followed by any very good results has not been shown, yet ever so many have been deceived by the fact that the failures were not flat, or *at their expense.*

In the automobile zone of activity, involving sliding gears, success has followed the use of "acid" steel, low in carbon, cemented; or low in carbon (alloyed) and cemented in some cases. In other instances it was possible to take advantage of other than the cementing process, through the use of alloys such as would engender the requisite hardness, holding the carbon content low enough to eliminate the ills of carbon to any marked extent. If it were possible to give the exact early history of the development of transmission gears, it is believed that history would disclose a vast percentage of the failures as the direct result of the conditions as follows: (a) the use of basic steel, high in carbon, heat treated to engender further rigidity; (b) the use of alloy steel, in which the same basic faults would be found, and in which the "elongation" is, say, 2 inches, fell below

10 per cent. after heat treatment. This question of the heat treatment is one which must be considered from two points of view, for if the steel is cemented and the core is found to hold the requisite qualities, then it is assured that the hard shell is

not at the expense of the dynamic ability of the steel as a whole. If, on the other hand, as a result of quenching and subsequently tempering, the steel evinces a marked falling off in the elongation, it is quite likely that the dynamic life will be short, and in gear work it would be just as well to trust to tool steel, in which failure is assured if it is put into gears.

In the earlier days of the automobile, when it was not well understood that cemented mild steel gears would well serve the purpose, tool steel was used to quite some extent, and the result was a crop of failures which could not be accounted for, although the fact is that some of the steel cost as much as one dollar a pound. It is easy enough, then, to account for the fact that the transmission gearsets as they obtain at the present time can cost very much less than ever before.

Relative Advantages of Alloy Steel Products.

From what has been said it might be thought that alloy steel is not desirable or necessary in work of this character. On the other hand, it is a fact that a vast number of the examples of gearsets used and illustrated in this article are made up with alloy steel gears. They serve so well as to render them above discussion, unless to point out the presence of quality residing within them.

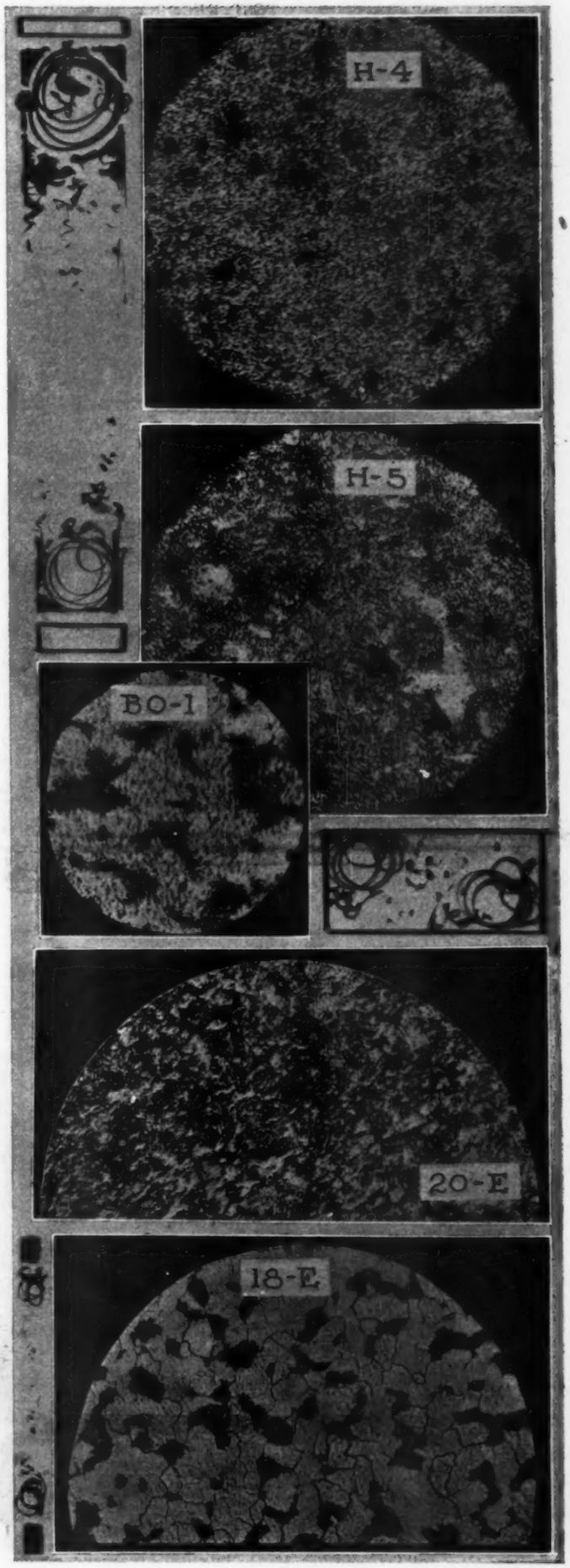
It is the problem of the designer to determine the section of the members, after having decided upon the materials which are to be used. Generally, it is the practice to select the materials, ascertain their characteristics as a result of careful tests under the several conditions likely to obtain in actual practice. By way of illustrating the situation it will be enough to give just such a set of tests as would enable a designer to determine the limiting values of the products in a given service.

It is certainly not necessary to use the same grade of material in all the gears of a transmission system, as, for illustration, the "master gears" do not clash, and they would not have to be of alloy steel of a fine grade, even in the cases using alloy steel for the clash gears. The great gain in recent times was made through the appropriateness of selection, and through the suitable treatment of the steel used in the several parts, considering the service. As a further indication of the extent to which materials can be spread out it is to consider the arduous service of the low-speed pinion in which the material cannot be too good. On the other hand what would be the use of using such fine material in the mate to the pinion? If the pinion with perhaps 14 teeth will do the work, using a given material, it is assured that the mate, with say 39 teeth, would last for ages using the same material. It is said to be desirable to have all the parts of a car last for an equally long time; certainly it is not necessary to have the parts which are easy to design last for an unnecessarily long time at the cost of materials better than would be necessary, on the ground of harmony.

Buyers of cars will not be able to see why some considerable headway has been made in recent times in divers ways, for the reason that it is not plain (on the surface) that matters such as these did receive a due measure of attention. On the other hand, it is plain to be seen that improvements were wrought.

Materials Do Not Have to Be of Some One Grade.

There is no need to use some one grade of steel all through a transmission system, although all the steel used can be low enough in carbon to assure ability to sustain under impact, which phenomena is bound to be present in transmission work to a marked degree. One of the strong points to be made in this article is that the ability of steel to sustain under impact is decreased as the carbon content is increased, and it is urged that alloying be resorted to if strength in excess of that which resides in carbon steel is wanted. This is not to say that carbon should abound in the alloy steel; on the other hand, for kinetic work, it is firmly believed that adding carbon under conditions involving alloys, defeats the aim, if it is desired to attain strength in "diagonal" work. In any case, entirely aside from what will come of the presence of carbon in quantity, if steel is alloyed,



TEST RECORD AS USED BY DESIGNERS OF AUTOMOBILES.

Specification		Tensile strength per Sq. In. in Tons	Elastic Limit Tons per sq. in.	Elongation in 2 Inches. Per cent	Contraction. Per cent.	Resistance to Drop Tests Fremont Tup	
						Nicked Test Bars Foot Lbs.	Plain Test Bars Foot Lbs
BCH	Natural state	24 to 25	14 to 16	28 to 33	65 to 70	231 to 325	.....
	Tempered and annealed	25 " 28	18 " 19	30 " 35	75 " 80	231 " 325	.....
RHB	Natural state	32 " 35	16 " 18	22 " 25	60 " 65	144 " 217	.....
	Tempered and annealed	33 " 36	18 " 19	25 " 26	65 " 75	144 " 253	.....
GDH	Natural state	38 " 41	22 " 24	20 " 23	58 " 65	108 " 181	397 to 433
	Tempered and annealed	39 " 43	24 " 27	25 " 28	65 " 70	108 " 181	397 to 433
HVD	Natural state	48 " 51	29 " 32	12 " 15	45 " 50	.....	217 " 253
	Tempered and annealed	52 " 54	32 " 35	15 " 18	55 " 60	.....	217 " 253
PLH	Fibrous iron	25 " 27	13 " 14	25 " 30	50 " 60	181 " 217	.....
BNC	Annealed	48 " 51	38 " 41	15 " 20	65 " 70	108 " 181	Bend without breaking under a blow of 433 foot lbs.
	Tempered and annealed	57 " 60	51 " 54	15 " 18	60 " 65	108 " 181	
	Tempered in oil	86 " 92	76 " 83	12 " 15	50 " 60	36 " 72	181 to 217
BND	Annealed	60 " 64	51 " 54	12 " 15	55 " 60	87 " 144	289 " 361
	Tempered and annealed	70 " 73	64 " 67	10 " 13	45 " 50	87 " 144	289 " 361
	Tempered in oil	121 " 127	114 " 121	2 " 4	20 " 25	Will not bend or break under a blow of 433 foot lbs.	

NOTE.—The steel as given in this table is that as used in many of the best makes of cars, in which kinetic ability is pronounced.

the fact remains that more skill is required to deliver the best results in the presence of carbon than is the case when the steel is very low in the same.

Data in Relation to the Table of Steel Values.

In the table the limits are given in such a way as to enable the designer to take into account the maximum possible result if the steel is properly treated, and the minimum likely result in average good practice. No reference is made to "cementing" results, in view of the fact that in a cemented section the core should show about the same as is here given for tempering and annealing—the shell should be glass hard.

Referring again to the table, it is to note that the materials belong to the classes as follows:

BCH = Special carbon steel in which the carbon is under 10 points, but in which the manganese is quite high (above 0.80) and the metalloids are very low indeed. This steel is especially for parts to be cemented.

RHB = A grade of carbon steel in which the carbon does not exceed 16 points and holds above 10 points. This is a true "cementing" steel, in which the effect of carbon up to that due to 16 points should be taken into account. In this steel it is desirable to hold the metalloids at a low ebb and the manganese should be quite high.

CDH = Steel of the nickel genera, in which the carbon ranges between 18 and 20 points, and the steel is suitable for use in the die (drop) forged state.

HVD = A high carbon (45 points) steel to be used in a limited way in parts not subjected to shock to an extent requiring the use of materials of a highly kinetic character.

PLH = Fibrous iron (puddle iron), which is the iron of the wagon maker in the past. This material is used for many purposes in a good class of automobiles, even for gears and axles (cemented), in which the carbon is as low as 4 points.

BNC = Chrome nickel steel, in which the carbon and manganese are low, and in which the metalloids are very low indeed.

BND = Another grade of chrome nickel steel, in which the manganese is quite high, and in which the carbon is a little higher than in BNC.

With information such as this before the designer it is easy to predict that the product will be harmonious, if it can be said that the "purchasing" representatives will procure the same material for the parts later on. It is possible under such circumstances to take into account the matter of the design as it relates to "notched" (nicked) bars as they perform in the "Fremont" test, and it is also easy to ascertain the dynamic responsibility of the parts such as will not suffer as a matter of design from the point of view of the notched bar. Irregular designs should be regarded in the light of "notched" bars; the performance in practice will be very much in the same way.

(To be continued.)

TRUE STORY OF THE AUTOMOBILE TIRE

By H. S. FIRESTONE, President Firestone Tire and Rubber Company.

EVERY practical automobilist knows that the pleasure or discomfort of an auto ride depends largely upon the tires, but how many of them know anything about the "life story" of these scapegoats of motordom? It is a story of immense human effort in the crude rubber forest and the cotton field—a chapter, not only of interest to the automobilist, but to the average citizen as well.

Native Tapping Wild Rubber Tree.

Civilization first heard of rubber in Herrera's account of the second voyage of Columbus in the year 1493, where he speaks of elastic balls made by the natives from the gum of a tree.

The first authentic account of its practical use was recorded in 1745 by the leader of a French Governmental expedition returning from South America who reported that the natives secured from the juice of a tree a certain gum which was very elastic, impervious to water and used in making bottles, shoes and squirt guns.

Thirty years later it was introduced to commerce when an Englishman brought from Assam, India, a soft spongy substance which would erase lead pencil marks and which afterwards became known as India rubber.

Many primitive uses were found for this wonderful gum, but owing to its susceptibility to changes of temperature, which rendered it sticky and more or less fluid, rubber did not come into its own until early in the last century. At that time it was discovered after a great deal of experiment, that by mixing sulphur with crude rubber and subjecting it to a high degree of heat, these former deficiencies were eliminated and a material was produced which was both tough and elastic, and would retain those properties under varying temperatures. This process of curing was called vulcanization and is the basis of rubber making to-day.

So great has been the development of rubber manufacture since that time that its products now exceed a value of five hundred million dollars annually.

Contrary to the popular impression rubber gum is not derived from the sap. It is secured from a milky juice or *latex* which is found only in the bark. This *latex* contains a substance known as caoutchouc (the active principle of rubber), together with certain albuminoids, resins, etc., which upon the evaporation of moisture coagulate, forming a thick, spongy substance. The percentage of caoutchouc, in proportion to other ingredients contained in the *latex*, determines the quality of the rubber.

The regions from which rubber gum is secured form an irregular belt in the tropics and sub-tropics extending around the earth, the quality procured varying greatly according to the species of plant, the soil and the climate. Great quantities are produced in Africa, Mexico, Ceylon and the Malay Islands, but the most desirable rubber for resiliency and wear resistance is secured from a tree found in the Amazon River district, South America. This rubber is known as Para, the name being derived from its chief city of export. It not only contains as high as 95 per cent. of caoutchouc, but the methods used by the natives in preparing it for market are so much superior that it is selected in preference to all others for the manufacture of the best automobile tires.

Rubber gathering in the Amazon River district is a hazardous and difficult undertaking. The supply comes from wild trees scattered throughout dense forests, to which paths must be cut through the tangled and luxuriant undergrowth. Even then, the trees can only be reached during three to five months of the year, as throughout the wet season the forests are completely inundated. The climate is so unhealthy that white men cannot do this work and it is necessary to rely upon the native blacks, who at best are undependable and lazy. Their reluctance to join rubber gathering expeditions can readily be understood when it is remembered that out of a season's expedition perhaps only half will return alive.

When a rubber tree is found the native gatherer cuts a series of gashes into the bark with his machete, encircling the tree from the ground up, as high as he can reach. Cups are fastened to catch the *latex* as it oozes out. When a sufficient quantity is collected it is removed to the temporary hut where a dense smoke-producing fire is made of certain nuts and palm leaves. Then taking his wooden paddle the native dips it into the *latex* and holds it over the fire, turning it round and round until the *latex* coagulates. As soon as it is hard a new layer of *latex* is added and coagulated as before. This process is continued until the mass has grown too large for handling, when the paddle is taken out and the rubber set aside for export. In this form it is known as a ham or biscuit of Para. The process of coagulation and fumigation with these specially selected nuts and leaves prevents decay and adds to the life and wear resistance of the manufactured product.

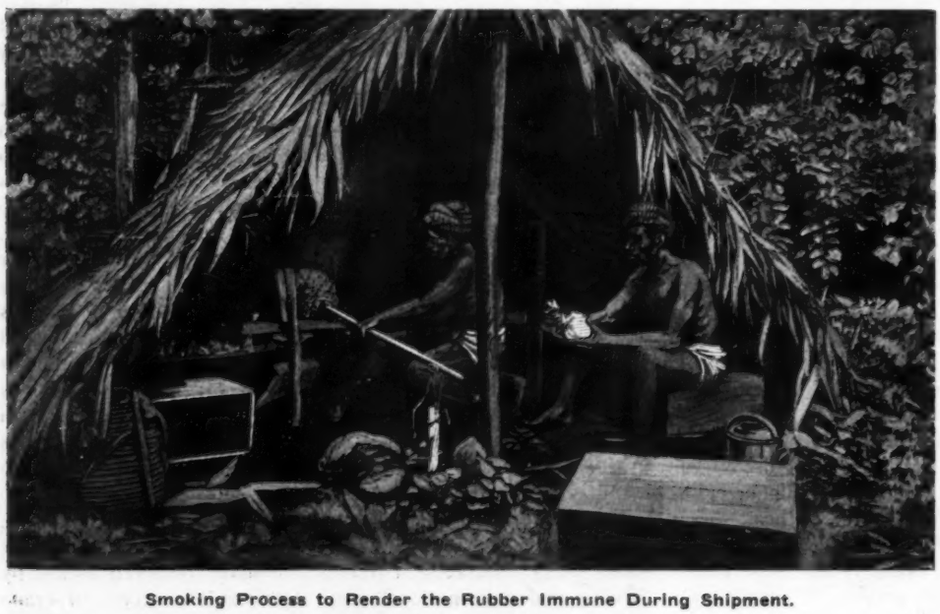
Tapping the trees for rubber does not necessarily destroy them, nor is it believed to materially shorten their life; but unfortunately many thousands of trees are annually rendered useless by careless and improper methods. Although the source of crude rubber gum is practically inexhaustible, the limited native labor supply and the difficulties encountered up to the time of marketing it have tended to keep down the supply and maintain a high

Tapping Trees on a Plantation Where Cultivation Has Made Progress.

cost of production. The output has been increasing steadily, but has not yet been able to keep pace with the enormously increasing demand for manufacturing purposes.

In order to obviate the difficulties encountered in gathering wild rubber and facilitate production, artificial cultivation has been resorted to in various localities. Scores of millions of dollars have been lost in ventures of this character, many of them merely wild-cat promoted schemes. It is estimated now, however, that there are 300,000 acres of rubber plantations in Ceylon and the Malay region and 100,000 acres elsewhere, principally in Mexico, some of which have already started to yield and promise handsome returns to investors.

In other localities rubber is collected and coagulated by a variety of methods. Africa, for instance, produces quantities of rubber from various species of vines, roots and even grasses which are destroyed in order to secure the *latex*, but which are rapidly replaced by new growth. These rubbers are designated by many different names, chiefly from their locality or the name of the native tribe gathering them. The methods of coagulation are very crude: some by evaporation, some by plant acids and others



Smoking Process to Render the Rubber Immune During Shipment.

by smearing over the bodies of the natives. The proportion of caoutchouc in some of these rubbers runs as low as 60 per cent., but each has its own particular place in the general manufacturing field.

Next to rubber the most important material in a pneumatic tire is the fabric which gives form and rigidity to the tire. Extensive experiments have been made with all textiles to secure a fabric, which in the finished condition will combine best with rubber, be unaffected by the chemical action in manufacture and demonstrate the greatest strength. Silk and linen show great strength, but when combined with rubber will not produce the results which can be obtained from cotton. There are many grades of cotton, the best of which is long staple Sea Island. It is erroneously supposed that this cotton grows exclusively on islands off the coast of South Carolina, but, in fact, only the seed comes from these islands, the supply being grown on the mainland. The next best cotton comes from Egypt, which grade for grade, is estimated to average about 20 per cent. less strong than Sea Island.

There has been a great amount of thought, time and money devoted to the combination of rubber and fabric into a successful pneumatic tire and develop it to its present stage of perfection. The scope of this expenditure is well illustrated by the fact that 1,641 patents have been issued in the United States since the first one, May 8, 1847, to say nothing of the numerous patents on solid and cushion tires. It is needless to say that many of these patents have come to nought, and that most of the men embarking in the business have failed to succeed. The development of the rubber tire has been the survival of the fittest, and the outlook is in favor of a continuation of this same compound.

ELECTRIC AND GASOLINE WILL NOT COMPETE.

CLEVELAND, Feb. 8.—Gasoline and electric cars do not compete in any sense of the word, according to Hayden Eames, general manager of the Studebaker Automobile Company. Mr. Eames says: "Each is designed for a different purpose and far from being rivals, they are for the most part allies. The electric is the city car par excellence. As a substitute for the touring car it is a failure. Its sphere is bounded by the area of the paved streets. Nor is the common idea that the scope of the electric is confined to ladies' use correct. On the contrary, while it is the only type of motor vehicle a lady ever should drive, because of its simplicity, lack of complications and immaculateness, yet its larger field is in the everyday service of the business man. Few people realize how rapidly rubber is ground off tires on a heavy touring car by the frequent releasing of the clutch, changing of gears, effort of stopping and starting, and the still more wicked grinding consequent on turning sharply to avoid or to circumvent street cars and wagons. Now, the electric is free from all this. It starts gradually and stops with small effort because its speed is at no time great.

"One of the factors that have retarded a proper understanding of the electric was the facility or means for charging the batteries home. To maintain a car at a garage costs about $30 per month, and there is the inconvenience of having to telephone for it and sending it back for recharging. This condition no longer obtains. The rectifier has revolutionized all that. This device, for transforming the ordinary electric current and automatically recharging the batteries, can be set up in your own barn or garage, and the total cost of maintaining a good electric will cost less than $6 a month, tires and everything included. Say $10 a month, year in and year out, to cover the price of renewal of batteries, repairs and current cost. In cities where rates for current are low it will average $7 per month."

DAME RUMOR BUSY WITH E. M. F. COMPANY.

DETROIT, Feb. 8.—The latest rumor has it that William Metzger has quit the E. M. F. Company. Last week the rumor coupled the selfsame item with Mr. Flanders, while the week before the same report was made relative to Mr. Everitt. According to the latter, the affairs of the concern have been the cause of much discussion among competitors, but as this is by way of free advertising to which a denial simply adds, the officers mentioned really do not mind it. In fact, as Mr. Everitt put it: "Seems as if some person interested in bringing about the dissolution of the 'All Star Cast' invented the yarn before the consolidation was actually effected and ever since, at frequent intervals." Continuing, Mr. Everitt said: "But now you tell me Bill Metzger has quit—or was it me this time? Well, if you ever hear again that Bill is out, let me know confidentially and I'll give him another job. He can have the same old one back again, because a concern that is producing 12,000 cars a year needs a mighty good sales manager, and I believe Metzger is the best in the world."

In the meantime, E. M. F. cars are taking like "hot cakes."

LETTERS INTERESTING AND INSTRUCTIVE

THE BEARINGS ARE MADE VERY MUCH LONGER.

Editor THE AUTOMOBILE:

[1,741.]—In letter number 1,714, of January 28, the subject matter makes me think. I have a two-cycle motor (horizontal) which gives me lubrication trouble in connection with the crank. Oil will not stay in the crankcase, but works back to the combustion chamber, thus destroying the balance of the mixture. There is a drip cup placed to feed oil to the crankcase through the intake, and if gasoline destroys the qualities of the lubricating oil, the question is: how is the crankshaft to be lubricated?

Does a two-cycle engine require a special carbureter?

Would it be safe to put a check-valve between the carbureter and the crankcase to keep "back-firing" out of the carbureter?

Belton, S. C. G. D. ROGERS.

In your case it would seem as if the trouble is due to the fact that lubricating oil (in excess) seeps through, by the piston, and destroys the integrity of the mixture, as well as "fouling" the spark-plugs. This would happen in the case, as you cite it, whether or not the motor is two or four-cycle.

In two-cycle motors, in general, means are provided for adequately oiling the crankshaft, and the bearings are made very long, to serve as packing for the crankcase compression, with the result that lubrication does not have to be profuse. Then, it is a fact that the gasoline vapor, which is really what has to be dealt with, is not the same as liquid gasoline in the lubrication oil.

A check-valve is usually placed between the carbureter and the crankcase to entrap the compression, unless the carbureter is so designed as to accomplish the purpose. Back-firing is due to the fact that the mixture is not with the right proportion of air to gasoline. If you will provide a means of holding a crankcase compression, and then adjust the carbureter so the mixture will be in accord with the needs of the motor, it is believed that your troubles will be materially reduced.

A shield of sheet iron over the ends of the cylinders (with a slot in it for the connecting rod to play in) will prevent the lubricating oil from going by, even if the shield is not so very tight. Your troubles will largely disappear if you will get up a crankcase compression, and prevent the lubricating oil from passing into the combustion chamber. A good carbureter is desirable, but it does not of necessity have to be especially designed for two-cycle work.

THE BEST PRACTICE IN BATTERY CONNECTIONS.

Editor THE AUTOMOBILE:

[1,742.]—I have nine cells of battery and I want to know if it is not better to arrange them in series-parallel rather than in series. If they are in series, and if the circuit opens at any point, then it is plain that the whole battery is put out of action. What is the matter with the idea of series-parallel wiring, in which it would appear that the battery will not be shut down if the circuit opens at some one point?

New York City. F. H. THOMPSON.

Your arrangement of three series of three cells of battery affords you the electromotive force of three cells of battery, and the ampere rate of flow of current of three cells of battery in parallel. It would be the same thing were you to buy three big cells of battery, each one of which to have the capacity of three of the small cells, such as you might put in series-parallel. If the voltage due to three cells of battery is high enough (which is probably not the case, in view of the fact that you show dry-cells), you can proceed as you suggest, but three big cells of battery would be superior for the purpose, since then you would have many less connections to watch. Two series of four good-sized cells would be better for the purpose, unless it is that the coil you use is one requiring a higher voltage than that resultant of the use of four cells of dry battery. In the case of the two sets of four cells of battery it would be better to use one as the working set and the other for emergency purposes. It is true that good cells of battery will deteriorate if they are connected to cells that are run down.

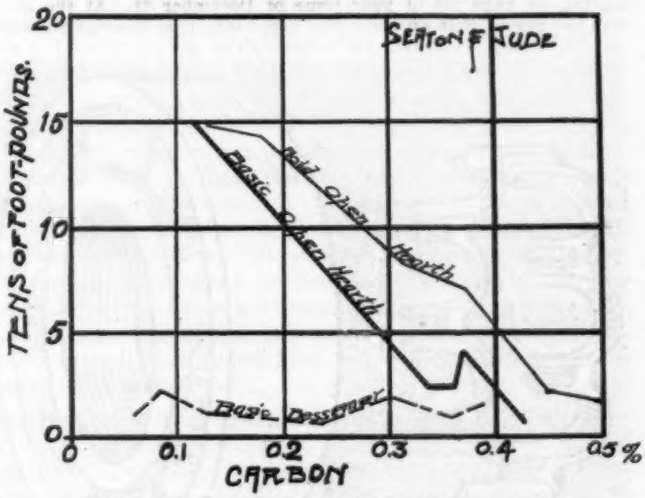
IMPACT RELATION OF VARIOUS STEELS.

Editor THE AUTOMOBILE:

[1,743.]—Since automobile parts are subject to impact to a great extent, the question is: What is the relative value of the several generic types of steel? In other words, is Bessemer steel so very much inferior, and is acid open-hearth steel better than basic open-hearth product? Then, there is the question of carbon content to take into account; what can be said to indicate with some force of clearness the true situation?

New York City. PLUMBAGO.

The questions asked might be cleared up in a volume of many pages, in so far as the knowledge on the subject is capable of inviting clearness. In such limited space as this it may be well to trust to a diagram or chart, showing the relations. Just such a diagram is the one to be found in the paper by F. W. Harboard, read before the Institute of Mechanical Engineers (English) November 20, 1908. This chart is reproduced here, in which (a) increasing carbon indicates decreased impact ability; (b) basic Bessemer steel has the least ability; (c) basic open-hearth steel



Curves Showing Impact Ability of Steel Products.

stands next to the lowest; (d) acid open-hearth stands the highest of the three. In view of the information afforded by the chart it is plain that acid open-hearth steel low in carbon is the steel to use (considering carbon steel) if the impact ability is to be a maximum. In this discussion crucible steel is not involved. Nor is the acid Bessemer product taken into account. The conclusions here reached are in good accord with the general facts, hence the chart is corroborative, and it has the virtue of being in full accord with the latest advices in relation to this important matter.

HOUSE MOVERS USE WOODEN ROLLERS.

Editor THE AUTOMOBILE:

[1,744.]—I note under the heading "Letters Interesting and Instructive," No. 1,714, January 28, that you make the statement that lubricating oil is ruined if diluted with kerosene or gasoline. This is a most natural assumption, but cannot be a fact inasmuch as I used for two weeks last summer a motor boat driven by a two-cylinder, two-cycle, two-port motor, having a bore and stroke of 5 inches x 5 1-2 inches and rated at 8 horsepower, which depended for lubrication of the crank pin, wrist pin and piston solely upon lubricating oil mixed with the gasoline in the tank and entering the crankcase via the carbureter. The motor turned at 800 revolutions per minute, and did not overheat during a five-hour full-speed run. This method of lubrication was not accomplished at the expense of other necessary features, as the pistons fitted tightly enough to show a compression of 60 pounds on a compression gauge when turned over by hand. Two pints of cylinder oil were mixed with each five gallons of gasoline. By this letter I do not wish to go on record as advocating this makeshift method of lubrication, as the scheme would not work at all with a four-cycle engine, and

doubtless interfered with the efficiency of the two-cycle, but the fact is it lubricated.

Dorchester, Mass. FRANK P. HAWKINS.

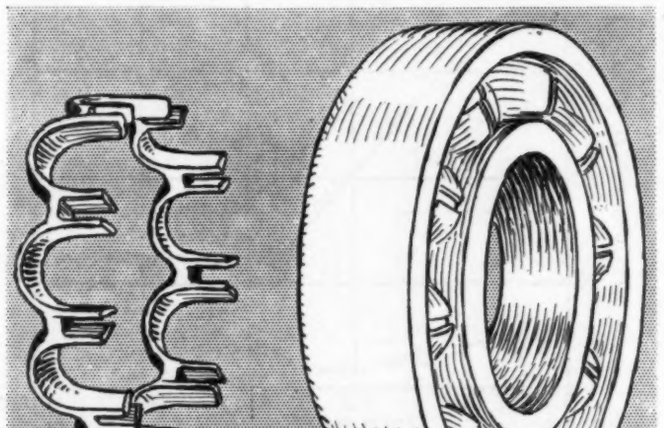
In your case it is plain that the gasoline was provided with lubricating properties to some extent, but it cannot be shown by you that the whole constituted a "lubricant" in the sense of the word as taken when serious work is to be done.

It is not plain that the cycles have to be lubricated, and to whatever extent the gasoline with lubricating oil will serve as a lubricant it will so serve in a two or in a four-cycle motor. Gasoline is absolutely not a lubricant, nor is kerosene. It is a fact also that lubricating oil in which either of these liquids is mixed will lose its ability to sustain under pressure. The fact that you ran a two-cycle motor for two weeks using gasoline in which some lubricating oil was dumped proves nothing. There are instances of record showing that bearings have run for years on water. The bearings were so big in proportion to the work that the pressure was not enough to cause seizing provided the heat was absorbed by a non-lubricating liquid; in this case, water.

SEPARATORS IN HESS-BRIGHT BALL BEARINGS.

Editor THE AUTOMOBILE:

[1,745.]—We are pleased to see the notice you have given our bearing on page 956 of your issue of December 31. At the same time we regret that an error has crept into this description, since



Spacers in Modern Hess-Bright Ball Bearings.

the separator you are describing as being made in halves must be that of some other make of bearing. Our separator is not made in halves; it is a single, high-grade bronze casting, with pockets milled out to a slightly larger sphere than the balls. This separator is inserted and after it is in place the projecting prongs are bent over in a die so that the balls are practically entirely enclosed.

We are sending you by mail a separator, as well as a completed bearing with the separator in place. From the above description you can readily see the actual construction.

We should very much apreciate it were you to give this correction space and were you to show an illustration by your sketch artist to make the matter clear.

Philadelphia, Pa. HESS-BRIGHT MFG. Co.

Annular ball-bearings of the "silent type" have been put out in divers ways, with separators, as springs, etc., and the plan, on the whole, has been of the greatest value in automobile work. If the balls cannot come into contact with each other it is true that noise will be aborted, and since there is no occasion for having a full complement of balls it is the practice to turn out "silent" ball bearings with separators to aid in the process.

The illustration given is of the Hess-Bright annular type, showing the separator in place, which separator is a bronze member suitably fashioned for the purpose, which has the shape as shown above before it is inserted into place. When the separator is placed, in the process of assembling the ball bearings, it is then subjected to a bending process.

FLEXIBLE SHAFT WANTED FOR A SPEEDOMETER.

Editor THE AUTOMOBILE:

[1,746.]—Will you please inform me through the medium of "Letters Interesting and Instructive" where I can obtain a flexible spring shaft for a Lea speedometer? I understand that they are not manufactured any longer, and I can find no one who can inform me as to repair parts. Can you tell me if the Duryea rotary valve achieved any success, and kindly tell me in what issue of "The Automobile" I can find description of same? Have nearly two years' issue, and know I have that particular one, but cannot find it.

When are you going to place those excellent articles of T. J. Fay before us in book form? They should meet with ready sales.

Chicago, Ill. E. A. MARTENS.

Every supply house of any pretence will be able to procure for you the very flexible shaft you seem to want.

The Duryea rotary valve was looked upon as a good success. Confer by mail with Charles E. Duryea, Reading, Pa.

No date can be fixed for the publication, in book form, of the articles by Thomas J. Fay.

TO IMPROVE GRADES OF BABBITT.

Editor THE AUTOMOBILE:

[1,747.]—I understand that ordinary grades of Babbitt can be so much improved as to eliminate the main objection. You tell so many things, it is possible you can cast light upon this subject also.

Binghamton, N. Y. XENTH.

If the inferior grades of Babbitt are melted in a crucible (a cast-iron pot will do) and if tin is added until the metal is rendered quite brittle, when in the solid state, it will then be fairly good as a bearing metal. Keep the surface of the molten mass covered with charcoal in the powder form to prevent loss of metal and to render the process healthy. The fumes of lead are not safe to inhale.

BECOMES DINGY AND DIFFICULT TO RESTORE.

Editor THE AUTOMOBILE:

[1,748.]—Is there any way to clean carbide burners after they are reduced to a state of corrosion?

What will remove the dingy appearance of celluloid?

Florence, S. C. M. A. W.

It is believed that the crust is an insoluble carbide, and it is true that in the removal of the carbide the metal will be reduced.

Celluloid becomes opaque in time and, in view of its low price, to replace it would seem to be the wise course.

PHASES OF AUTOMOBILE LAWS TO CONSIDER.

Editor THE AUTOMOBILE:

[1,749.]—In reference to your article entitled "Efforts Toward Uniform Automobile Laws," I wish to call your attention to Sec. 6, Subdivision 3, the latter half of which reads, "and if traveling in the same direction, use reasonable caution in thereafter passing such horse or animal, providing that in case such horse or animal appears badly frightened or the person operating such vehicle is requested so to do, such person shall cause the motor of such vehicle to cease running so long as it shall be reasonably necessary to prevent accident and insure the safety of others." If I understand this correctly, it means that if an automobile driver is driving in the same direction as the horse and the animal appears frightened, the automobile driver shall be obliged to stop his engine. How is this driver going to pass the horse? I believe that in that respect the laws of the State of Wisconsin cannot be improved upon, which read as follows: "Every person operating an automobile or other similar motor vehicle upon or along any public highway shall upon a signal by putting up the hand or other sign of distress, made by a person riding or driving a horse or horses, which are frightened, cause such automobile or other similar motor vehicle to stop, unless a movement forward is necessary to avoid accident or injury, and upon request shall stop all motor power until such horse or horses are under control; and shall, if requested, assist such person or persons to pass such automobile or other similar motor vehicle in safety. All motor power shall be stopped on any automobile or other similar motor vehicle while left unattended on the public highway." I have seen many times when a horse, on account of fright, will begin to back the buggy around and in almost every case the automobilist has had a very narrow escape if it had not been for him moving out of the way, which he would not be able to do in case his engine were shut down.

I also believe that in a case like this, where the engine is down, the automobilist should be exempt from any liability on account of collision.

Phillips, Wis. ARTHUR BEYER.

End on the Radiator Looks Very Artistic.

SIMPLICITY which lends itself to economy is the keynote of the Speedwell Motor Car Company, of this city, makers of the Speedwell, a moderate-priced car. So far is this idea carried that the manufacturers, now entering upon their third year, feel safe in the statement, "The Speedwell price ($2,500) is the highest price that should be paid for the best motor car built." At this price, too, the product is all that can be desired in the way of material, workmanship and accessories.

Thus, taking up the details, the motor is found to be of 40 horsepower rating, but actually capable of delivering 50. The cylinders are cast individually, in the belief that cylinders so cast are more uniform than larger, more complicated castings could possibly be. The valves located on the side are operated from a single camshaft. The bore of the cylinders is 4 3-4 inches and the stroke 5 inches, and the cylinders, pistons, piston rings, crankshaft and all working parts are accurately ground. The valves are very large, of nickel steel, and operate entirely without noise. The power plant is completely self-contained with an an adjustable ball-bearing fan which is mounted on the front, the commutator being on top of the engine and very accessible. Following modern practice, the crankshaft is offset from the center line of the cylinders, reducing cylinder wear, lessening vibration and increasing the efficiency of the motor.

Well Worked-out Lubrication.—The lubricating system is very well thought out, there being but a single place on the entire engine to introduce oil. Three gallons of oil are introduced through this receiving part, which passes directly to the sub-base of the engine. In the commutator shaft column is a pump, the duplicate of the water pump, which pumps the oil to the engine in large quantities, which tends to wash and keep it clean, the oil in turn overflowing and passing down through a filter to the sub-base again, the process to be repeated. This gives an excess of oil at all times for lubricating purposes, yet as the oil cannot accumulate in the upper base the spark plugs of the Speedwell car are never fouled.

The carbureter is of the very latest automatic type with a hot-water jacket. By means of this jacket the gas is kept at a constant temperature throughout the year, and the fuel system is therefore not affected by heat or cold, or by dry or moist atmosphere, or other weather conditions.

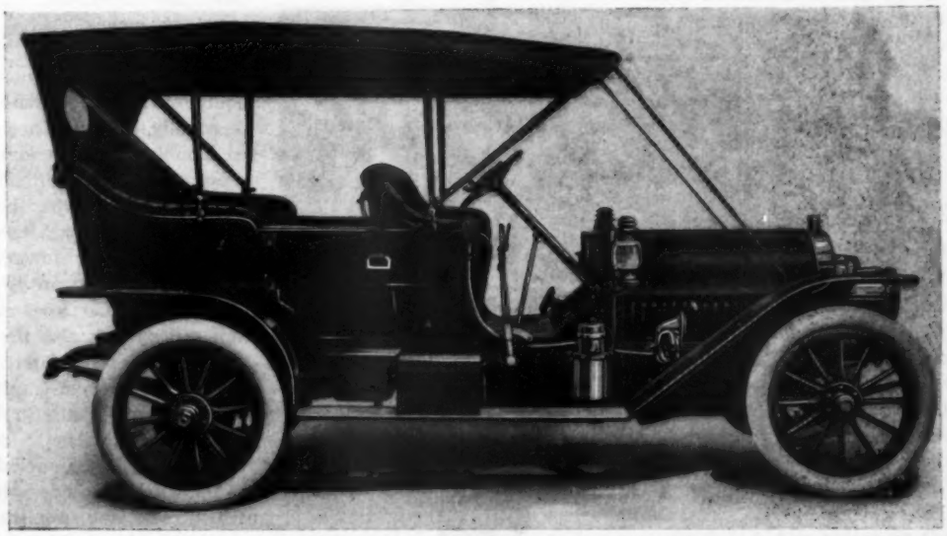
Double ignition is provided, using two sets of spark plugs, one system being entirely independent of the other. The battery supplies the spark coil and one set of plugs, and the Bosch magneto supplies the other set of plugs, and in the event of accident to one system the other system is entirely independent.

The cooling of the engine is taken care of by a genuine square-tube honeycomb radiator which is very efficient. This, together with the direct-driven gear pump, makes a frequent supply of fresh water unnecessary.

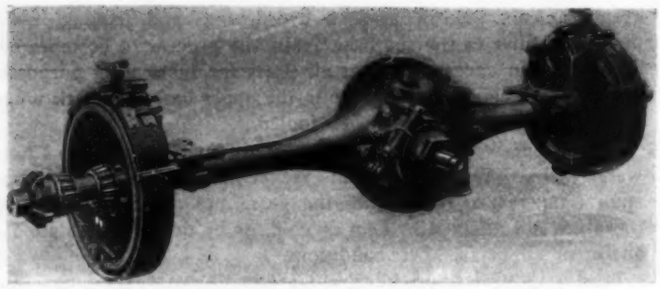
The motor is controlled by spark and throttle levers on top of the steering wheel. In addition, an auxiliary air inlet between the carbureter and the motor is provided which is operated by a foot pedal. At extreme high speed, or when great power is necessary, this auxiliary air inlet can be opened gradually by the foot pedal, thus giving to the engine the maximum amount of air it will take. The extra power obtained by this device is surprising and it is a great feature for those who wish high speed and powerful hill-climbing abilities.

The clutch, which is interposed between the engine and transmission, is of the cone type, leather faced. A very large square section spring may be adjusted externally, the thrust of it being well taken care of by ball thrust bearings. The shifter, in addition, runs upon ball bearings, so that there is very little opportunity in the entire clutch mechanism for wear. The universal joint between the clutch and transmission is a combination of a slip joint with a universal. It is of very stout construction, completely housed in to exclude dirt, and well provided for in the matter of lubrication.

An Improved Transmission.—The transmission shows many new and valuable improvements which are mostly by way of minor details of design or construction, but which are invaluable in the more severe daily use. Thus in the single matter of leakage of oil or grease out of the bushings in the case, much lubricant is lost and money wasted. On the gearbox of this car a stuffing box is provided for both ends of the driving shaft which entirely eliminates any grease or oil escaping, a common fault of nearly all cars. The telescoping or driving shaft is provided with a long and very efficient roller bearing. Both shafts



Side View, Depicting Wide Entrance and Absence of Obstruction.



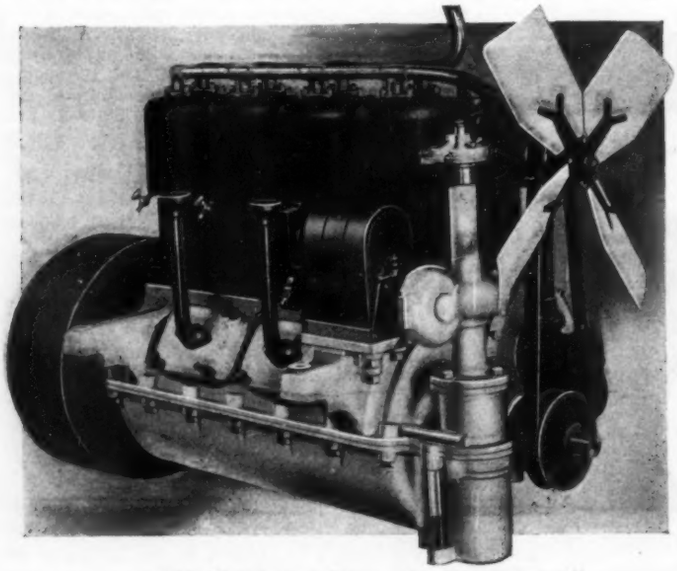
Rear Axle in One Piece of Drawn Steel.

are themselves mounted on large Timken roller bearings. The construction of the driving shaft follows the very latest practice, having the keys milled integral with the shaft for the sliding gears. This permits a greater cross section of metal to be used as compared with former constructions of a square shaft, and it also adds strength. The gears and shafts are formed from a special alloy of vanadium steel, and both gears and shafts are hardened and accurately ground. The transmission is of the selective type with three speeds forward and reverse. The direct drive is on the third or high speed. All gears are of special gear alloy, containing vanadium as the principal constituent. This material, it is well known, is unexcelled for this use, although its excessive cost hinders the use in any but the highest priced cars. Three gear ratios are provided and the purchaser is given the option of 2 1-2 to 1, 3 to 1 or 3 1-2 to 1.

Axles Show Careful Designing.—The front axle is a one-piece drop forging of I-beam section, which, after being finished, is given a special heat treatment. A special feature of this axle is the fact that the steering heads themselves as well as the wheel spindles revolve on large Timken roller bearings. This makes steering easy, and the wear slight.

The rear axle is of the full floating type, the floating axles themselves carrying no weight whatever, the weight of the car being carried on the outside of the tubing. The floating axles are also heat treated. The housing for the rear axle is one piece drawn steel which is very symmetrical and is built entirely without the use of strut rods, rivets or brazing. The differential, the bevel gears and all the bearings are mounted on a frame which can be quickly withdrawn for inspection from this pressed steel housing. This new axle is the most wonderful example of the diemaker's art. The arrangement of the parts is such that all adjustments may be made from the outside, which is a little refinement that old drivers can testify to the sterling worth of.

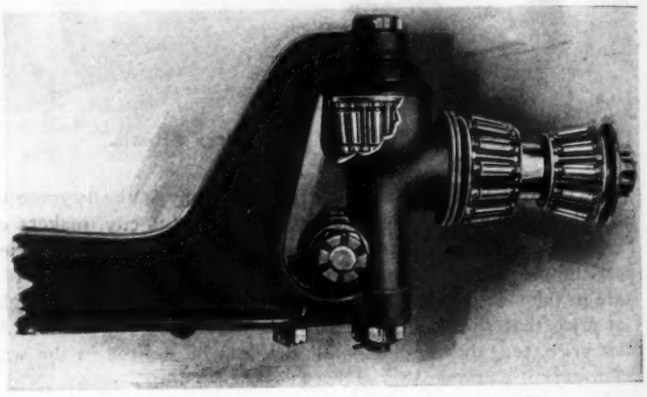
The liberal, one might almost say excessive, use of roller bearings will be at once remarked. Inasmuch as published figures give the consumption of power for plain bearings as 2 per cent. and of rollers as 1-4 of 1 per cent., it may be seen at once what a great saving this liberal use of them effects. In fact, it is equivalent to a much more powerful engine in that the power delivered to the rear wheels is increased by just such a percentage for every roller bearing used.



Individual Cylinder Motor with Magneto.

Large, Liberal Brakes Are Provided.—The brakes are very large and powerful and are double on each rear wheel, being 2 1-2 inches wide by 14 inches in diameter, both brakes being equalized. It is thus possible to load the car heavier on one side than on the other and still have both brakes operate alike, a great preventive of skidding.

The steering gear is very large and substantial and is of the worm and complete gear type. This gear may be revolved at four different points, bringing into operation four different sets of teeth. This makes, in reality, four different steering gears in one, and should even outlast the car. It is adjustable for every move. Its bearings are very large and all the parts are hardened and ground. The steering wheel is an aluminum web, the wood being laminated on the rim. The touring car and limousine types have a 16-inch wheel and the roadster 18-inch wheels. The advantages of this unit construction of steering wheel, rim and spider over the usual practice of attaching the rim by means of three or four small screws cannot be overestimated. In case of trouble, where the utmost dependence upon the steering arrangement is necessary, the driver will always have complete confidence in this member, knowing that there are no wood screws to work out, leaving the bare rim in the hands of the astonished driver.



Front Axle with Timken Roller Bearing Knuckles.

The wheels are 34 by 4-inch all around except in the limousines and seven-passenger cars, in which case the size of the tires are increased. The wheelbase is 120 inches and the tread 56 inches.

The car is built in three different types: touring cars for five and seven passengers, limousines, roadsters with single or double rumbles or with military seats and with a baby tonneau body. The springs are of an exceptionally fine quality and are double heat treated and oil tempered.

The front and rear springs are both of the now-popular long, flat, semi-elliptic type, the former being shackled at the rear and through the frame. Rebound clips are fitted on both and full provision is made for oiling.

The body lines are straight, and the long extended fenders give a somewhat low, racy appearance. The bodywork is of a high order, as is also the painting.

The car is completely equipped with two gas lights, generator, two side lamps, tail lamp, horn, jack, tool kit, tire repair kit, tire pump, battery, battery box, Bosch magneto, robe rail and foot rail.

The price, $2,500, includes the extras mentioned above, but the top shown in the side view of the touring car is an extra, listed at $125. So, too, are the extra revolving seats in the tonneau, two in number, which with 4 1-2-inch tires all round, for the man who wants larger tires, list at $100—that is, $100 for both.

CALIFORNIA ALIVE TO THE NEED OF HIGHWAYS

SAN FRANCISCO, CAL., Feb. 1.—At the State Legislature, now convening at Sacramento, much discussion and rather heated debate has taken place with regard to the good roads movement. Two propositions were made; the first, being backed by the Governor, was the proposal to issue bonds to the amount of $18,000,000 for a great system of State highways. The Association of Good Roads proposed that the State should assume control and maintenance of such parts of the roads built by the counties as would be accepted by the State as part of the system. The great point of controversy threatened to be whether a State commission or the State Engineer and his advisory board should have the handling of the matter. The association wanted a commission.

The Governor stated that he wanted no more commissions, and for a little while it looked like a war. After a conference it was decided that each side should draw up their bill and they should be presented. The Governor, in speaking to the members of the association, expressed himself as follows:

"I want to co-operate with the committee from your association in framing a bill so that it will create a concrete State road system and provide for its future maintenance, but we must come together on this subject. When the counties issue bonds and build roads that are a part of the State system we will provide that such roads are to be maintained by the State. But I do not like the tentative bill presented by the executive committee of the association. It was drawn by men not familiar with legislation, as was evidenced by the provision for nine-year terms of office, when our law limits the term of officials to four years, unless otherwise provided in the constitution. I don't like the provision for a commission of three members, each at a salary of $3,600 a year. I want the work of supervising centered in the State Engineer's office. When I get $3,600 a year to pay a man I want to get an expert from Washington, who has been brought up on road building and knows every scientific detail of it. I want to put that expert out on the road and make him work with his coat off; then, if he doesn't make good, off comes his head. But if I have a commission on my hands, I cannot remove its members at will. If they don't make good I am saddled with them for four years. So I want the supervision of the road building centered in the State Engineer's office, where it can be under experts. Then, again, in the association's tentative bill is a provision that would saddle the State with a whole lot of county roads that have nothing to do with a State system. I want arterial roads running down the valleys from one county seat to another, with branches to cities and towns of importance and connections in the necessary places." This clearly showed the chief executive's opinion.

On the other hand, the association, through its secretary, said: "The State Engineer's office is too busy with river work, harbor work and the work of supervising State buildings to give the requisite time to road building. In other States the best results have been secured through a commission, and we want a commission of the best road men in the State."

The chairman of the commission stated that public sentiment was so aroused in the matter of good roads that it would force the appointment of good commissioners and hold the commission up to its work. A committee of the association called on Attorney-General Webb and talked over road matters. The Attorney-General advised them to get together with the Governor and agree on a bill. This was done and the committeemen saw that there was merit in the Governor's views and agreed to abandon their contention for a commission. They have agreed to pull in the same harness, and the Governor will offer two bills, one to submit to the voters of the State the proposition to bond the State for $18,000,000 for the construction of a system of highways, and the other to provide for a survey of the proposed system of highways. The Governor realized that if every effort is centered on the bonding proposition there will be little road work done until two years hence, when the proposition of bonding is submitted, and, in the event of the bonds being defeated, road work would get a terrible setback. To enable the counties to go ahead with their plans, the proposal has been made to survey the State and define the roads that will constitute the main State highway. With these defined, the counties may then proceed with the improvement of the roads that will act as feeders, so that when the State system is constructed the county system will be complete and fit in. Definite action and the adoption of the bills have not been decided upon, but good work is being done and there is little doubt of the outcome.

Among the Giant Redwoods of Marin County, Cal.

MICHIGAN SUPERVISORS FAVOR STATE LICENSE.

LANSING, MICH., Feb. 6.—The State Supervisors' Association, which is holding a convention in this city, has gone on record as favoring a law requiring automobile owners to pay a State license of $10, the fund thus collected to be used for the construction of good roads. The supervisors were of the opinion that automobiles do more damage to the roads than any other vehicle.

Resolutions were adopted endorsing the State Highway Department, as conducted by Commissioner Earle, who has lately been the target for considerable criticism at the hands of the farmers' clubs and others, so much so that there has been considerable talk of abolishing the office altogether. Just what the future holds in store remains to be seen, but it is a fair inference that nothing drastic will happen.

PRINCE HENRY TOUR UNDER PRECISE CONDITIONS

BERLIN, Feb. 1.—Rules for Prince Henry tour (1909), which is the event superseding the "Herkomer," will take place from the date of weighing in June 9, next, to the 19th of the same month, and it is interesting to note the manner in which freaks are debarred from the contest. The following rules, which will govern during the contest, were formulated by the Imperial Automobile Club, Berlin; Austrian Automobile Club, Vienna; Hungarian Automobile Club, Buda Pesth, and Bavarian Automobile Club, Munich, as the product of careful deliberation, having in view the fact that the contest is to be deprived of all racing tendencies, hence a reliability run under carefully devised rules, quite completely given as follows:

Open to four and six-cylinder vehicles, whose frames are placed over the axle, of from 7 to 28-horsepower, as calculated on the following basis:

$$P.S. = 0.007\, i\, d^2\, {}^3\!\sqrt{S^2}.$$

i = number of cylinders, d = bore, S = stroke, all in centimeters, *P.S.* being German for H.P. The cars must be at the close of the first list of entries in the possession and use of the entrants, all of whom must be members of internationally recognized or German affiliated clubs, or of Austrian motor clubs recognized by the Austrian Automobile Club. The cars must all be at least four-seated, with double side entrance and doors, have steps of full length, and must fulfill all the police regulations for street and traffic. They must all be fitted with two brakes acting independently of each other, exhaust, three lamps, of which the one must be attached to the rear in order to light up the Prince Henry number, reverse, hill climb drag and a single-toned signal. The cars must also be painted and varnished and have four mudguards of at least 200 millimeters breadth, measured horizontally to the length of the car. These may not be displaceable. The minimum measurements for the body are as follows: Breadth of the front seats, 1,140 mm.; breadth of the rear seats, 1,200 mm.; both measured from outward edge to outward edge of the body; height of the front seats, 750 mm.; height of the rear seats, 800 mm.; both measured from the middle of the motor over the upper edge of the frame, i.e., from the upper edge of the seats back to the upper edge of the chassis frame. The distance from the top back edge of the front seat to that of the rear seat, measured from the middle of the driver's seat, must be 1,100 millimeters. The back wall of the rear seats must be closed throughout. The lowest point of the chassis must be at least 150 mm. above the ground. All cars must be fitted with a speedometer, and no advertisement whatever may be attached to the vehicles.

The minimum total weight of the cars, expressed in kilograms, will be calculated according to the formula:

$$G\,k\,g = 147\, {}^3\!\sqrt{P.S.} - 6.5 + 646.$$

The horsepower (P.S.) being the same as above. The weight will be calculated exclusive of spare tires, inner tubes, fuel (petrol, water, oil), with empty tool case, and with oil in the motor and gear. In order to render the weighing-in easier, the cars may come to the scales with oil, water and petrol in the reservoirs; this will be calculated at 60 kilograms per car. The minimum weight of the body has been fixed at 15 per cent. of the total for each car. The body, which must be made of wood or metal, comprises all mudguards and their fittings, steps and their attachments, toolbox on the steps with tools, luggage rack, lamps, single-toned signal and tire holder. No lightening of the weight may take place during the trial.

Only petrol (gasoline) of a specific gravity of .680 upwards, benzol, alcohol and petroleum and their mixtures may be used as fuel. All additions are strictly forbidden. All cars may be driven only by members of the above-mentioned corporations, who receive no recompense for their driving.

Entries must be made by the owner at the headquarters of the promoting clubs on a filled-out form, enclosing the fee of 500 marks ($125). This fee comprises the liability insurance for damages to persons up to 500,000 marks, with 100 per cent. for damages to goods up to 10,000 marks, with 90 per cent. as well as insurance of the cars against fire in the various garages during the whole tour. A factory certificate as to the cylinder dimensions must accompany the entries. Entries close on April 1, at 6 P.M. Entries at double fees are accepted until May 1, 6 P.M.

The tour takes place from June 10 to 18, with the weighing-in at Berlin on June 9. The route runs:

Thursday, June 10—Berlin-Breslau, first speed trial.
Friday, June 11—Breslau-Tatra Lomnicz, or Tatra Fiered.
Saturday, June 12—Tatra Lomnicz-Buda Pesth.
Sunday, June 13—Rest and exhibition.
Monday, June 14,—Buda Pesth-Vienna.
Tuesday, June 15—Rest and exhibition.
Wednesday, June 16—Vienna-Salzbury.
Thursday, June 17—Salzbury-Munich, second speed trial. Finish at Munich.

The start takes place once for all as fixed by the executive, the car with the biggest horsepower (No. 1) going off first. Every car will be accompanied by an official observer; every car must be occupied throughout by at least three grown-up persons, inclusive of the observer. During the speed trials the cars must carry four grown-up passengers, or 70 kilos of ballast in lieu of a fourth. The driver can hand the control of his car temporarily to his chauffeur, or a person nominated, before the commencement of the tour. This may not be longer than for two hours daily, if indisposition does not render a longer term necessary. The driver must steer his car personally in the speed trials.

All repairs may only be carried out by the driver, chauffeur or nominated passengers. Repairs during the time the vehicle is in motion are prohibited. All repairs also at the various daily garages may only be made with the material carried on the car. Transgression means disqualification, the only exception being the replenishing of tires and tubes. The awards will be made in points as follows:

Every commenced minute of an involuntary stay will be debited with two-tenth points. An involuntary stay is every stay during which a repair is made, the whole of the time being calculated from the stopping of the car to its continuing. Repairs of the speedometers may only be made at the various stations during the sixty minutes before the start given over to repairs and replenishments of fuel, oil and water. No debit points will be given for damages to speedometers.

Further, every commenced minute over the time allowed before the start for repairing will be debited two-tenth points; arriving late at the start from other causes than this will also be debited with two-tenths points. Tube defects from the garage to the start will not be reckoned. Changing of tires, as well as repairs or mending of tires, will only be punishable with one-tenth points each, regardless of time. Every alteration of the tires, especially fitting of enclosures or bandages, will be looked upon as a repair. Every change of the detachable rims will be debited with one-tenth point. Tube changes will not be reckoned. Replenishments of cooling and brake water after the start will be debited with five-tenth points each time. Fuel and oil necessary for the day must be carried in the car in extra tanks, as no official petrol and lunch stations will be available. Lubrication of the driving chain is, excepting the automatic working, only permitted once during the day; further lubrication of the driving chains, as well as of the motor and car—excepting through fitted tubes—is forbidden during the day; transgression will be punished with one-tenth of a point.

Two speed trials take place on the level during the tour. These will be calculated on a basis not yet published in such wise, that each car, according to whether it exceeds the speed fixed for it as normal or not, receives for every commenced one-tenth per cent. in the first trial one-hundredth point, and in the second speed trial two-hundredths point in credit or debit marks. The three credit points mentioned above will not be taken into consideration in the awards for the special speed prizes. Special provision is made in case of a "draw."

INTERNATIONAL AERONAUTICAL EXPOSITION ASSURED

PARIS, Feb. 3.—There will doubtless be an international aeronautical exposition in Paris during the year 1910, with the French Government as its backer and promoter. The initiative in the matter has been taken by the Ministry of Public Works which, with Minister Leon Barthou at its head, has shown considerable enthusiasm for aerial navigation, and has already succeeded in obtaining a Government subvention of $20,000 for the encouragement of flying.

At an early meeting of Parliament the following resolution will be brought forward to be voted upon: "The Chamber of Deputies invites the Government to organize a national and international exhibition of aerial locomotion in all its forms during the year 1910." If, as is very generally believed, the resolution meets with the approval of Parliament, work will be begun at once on preparations for the first exhibition the world has ever seen in which aerial vessels occupied all the space.

The Esplanade des Invalides, on which the last two commercial motor shows were held, and which was the scene of a portion of the 1900 World's Fair, has been seized upon as a suitable site. For an indoor exhibition only the position is doubtless perfect, for it is but two minutes from the Champs Elysees, and as conveniently reached from all parts of Paris as is the lower end of Central Park from different portions of New York City. To give the exposition its full measure of interest, it will be necessary, however, to provide for open-air experiments by aeroplanes and dirigible balloons, and for this purpose the Invalides is not ideal.

Issy-les-Moulineaux, which is just on the city borders, would give all the space necessary for flying, and as the Galerie des Machines has to be pulled down this year it is suggested that it should be transplanted to this ground in preparation for the aeronautical exposition. The hall is the largest in the world, there being sufficient space under its vast glass roof to house a score full-sized dirigibles and more than a hundred aeroplanes. An alternative site can be found at Bagatelle, on the borders of the Bois de Boulogne, and a few minutes from Longchamps racecourse, where Santos-Dumont made the first public flight in Europe, and where Delagrange, Bleriot and other pioneers first learned to fly. The setting is a pretty one; the area is sufficient to allow of the construction of the necessary hall, while leaving all the space required for starting dirigible balloons and aeroplanes for demonstration flights and competitions. The only objection at present is that means of transport are somewhat limited. The choice of a ground, however, will be one of the least of the difficulties that the Government will have to meet, there being in addition to these three positions, several others which many cities would consider adequate for the circumstances.

NATIONAL BALLOON RACE STARTS, INDIANAPOLIS, JUNE 5

WITH the breaking up of Winter in this country the Aero Club of America is looking forward to a greatly renewed activity among the American aspirants for aerial honors. A long list of prizes has been announced, which will be competed for under the auspices of the club, some of the more prominent are: the President's Prize, consisting of $1,000; the "Scientific American" Trophy; The Michelin Prize of $4,000, The Gordon Bennet Aviation Cup, the Fulton Flight Contest for $10,000, and the National Balloon Race. The Fulton Contest for the New York "World" Prize will take place during the Hudson Fulton Celebration, and it is hoped that it will be the forerunner of many similar prizes offered in the future under the auspices of the Aero Club.

The national balloon race will start from Indianapolis, Ind., on Saturday, June 5, according to an announcement recently made by the president of the Aero Club. The details will be managed by the Indiana Aero Club, which has just been organized and has applied for affiliation with the Aero Club of America. The entry fee is $25, which will be returned to all who start. The contestants are limited to official pilots of the club, of which there are now 17, but before the entries close, on May 1, this number will undoubtedly be increased. The prize will be a gold cup valued at $1,000, and additional prizes will probably be offered for the second and third men. Under the international rules the contest is limited to balloons of a maximum capacity of 77,000 cubic feet.

At the recent meeting of the directors, Cortlandt F. Bishop was re-elected president of the club, and arrangements for the third annual banquet, to take place in March, were rushed under way. By that time it is hoped that the fund for the medals to be given to the Wright Brothers in recognition of their services to the cause of aviation, will be completed and the time for presentation determined upon. Thus will the activities partake of interesting variations on a broadening basis.

Y. M. C. A TO START AERONAUTIC SCHOOL.

The West Side Y. M. C. A., of New York City, is making plans for an experimental course in aero science, beginning February 15, and if sufficient interest is aroused in the subject the association will open in the Fall of 1909, or possibly earlier, a school to train men for positions as aerial chauffeurs and engineers. The experiment will take the form of a series of free lectures on aeronautics by well-known aeronauts. The first lecturer will be Winthrop M. Scarritt, member of the Aero Club and former president of the A. C. A. He will speak on "The Experiences of a Tenderfoot in the Clouds." On March 1 Augustus Post, of the Aero Club, will speak on "The Practical Side of Aeronautics," and on March 8 Wilbur R. Kimball will discuss "the Practicability of Flight." Taking things as a whole it is plain to be seen that aerial navigation has taken a hold on the public and from all accounts there will be more than spectators as the product of the interest displayed. Recruits should enlist in the service, which has already rewarded the most daring of the aeronautic students so mightily.

AERONAUTIC SOCIETY CHOOSES OFFICERS.

At the annual meeting of the Aeronautical Society, held in the rooms of the Automobile Club of America, plans were discussed for the coming contests at Morris Park race track grounds, to be held some time in May. The following officers were elected for 1909: President, Lee S. Burridge; vice-presidents, Louis R. Adams, William J. Hammer, and Roger B. Whitman; secretary, Wilbur R. Kimball; treasurer, Dr. William Green; directors, Orrel A. Parker, C. B. Levy, Ernest La Rue Jones, A. C. Triaca, Riley B. Scott and Dr. Julian P. Thomas.

NEXT BRITISH AERONAUTIC EXHIBITION.

LONDON, Feb. 6.—The Society of Motor Manufacturers and Traders, in conjunction with the Aero Club, will hold an aeronautic exhibition at Olympia from March 19 to 27. Aeroplanes or models will be given space free of charge, and sufficient entries have been received already to insure a successful and interesting show.

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COMBINED EFFORT IN THE MIDDLE WEST.

Automobile activity in the West is now centered in the Chicago show, which opened under the most favorable auspices, illustrating again the fact that "in union there is strength." Never before, in the history of trackless mechanical transportation, did so many cars mass under one roof, there to proclaim to all the world the fact that the automobile is a power in the land. Nor can it be said that even veterans fully realized just what it meant to assemble the makes of cars which go to represent the industry which compelled the exchange of $467,000,000 within a single year—the last year, to be sure.

In the year to come it is variously estimated that some 80,000 automobiles will be sent out as the agents of the industry; out into the world, in which they must show worth in a manner as never before, and it is well worth risking the prediction, in effect, that these same cars will proclaim in sonorous voice that dreams do come true, and the echo which took seed in the Chicago show will come back within a year with augmented results.

* * *

TAKING INTO ACCOUNT THE MATERIALS.

Static ability was once the main criterion rather with the idea that kinetic properties could be reflected to an adequate extent. Kinetic requirements proved the undoing of the earlier theory with the result that the hunt for materials of a kinetic character has been strenuous, uninterrupted, and through divers channels. From the old methods of reflecting kinetic qualities to alloy steel, in the search for materials pronouncedly superior in "diagonal" work, was a long way, midst thorns bearing the scent of roses, due to the mode of procedure in which "the wish was father to the thought."

The thought was that price was a good indication of quality, and the makers of the materials were perfectly willing to allow the same thought to propagate and spread to the remotest corners, and to swell the "tide." That the scheme will not hold water is rendered apparent from the fact that the best results come from the use of "cementing" steel in which carbon is low—very low indeed; alloying if rigidity is to be intensified; holding to the plan in which kinetic ability is foremost, in any event.

Recent investigations disclosed the glaring fact that none of the "impact" tests in vogue tell the truth, the whole truth, and nothing but the truth; they do disclose the important fact that with increasing carbon impact ability decreases. This is a discovery of such great importance that it should be "branded" in the memory of designers with a "hot iron," particularly in view of the fact that lowering the carbon in the steel increases the melting temperature of the same, and the furnace linings last for a length of time far less, thus accounting for the "influences" in favor of steel with a carbon content above the best requirement. That the carbon content should hold below the point at which hardness will follow quenching from cementing temperatures is assured, for then the core of a cemented section will be ductile, and dynamic, while the surface will be rendered hard as glass, due to cementation, in which carbon abounds in the surface layer sufficiently to deprive the steel of the ferrite excess; interjecting cementite instead, which later condition affords assurance of glass-hardness on the surface while the soft core lends stability to the project as a whole.

* * *

WHAT PROPORTION SHOULD THE BODY BE?

Among the rules formulated for the running of the Prince Henry tour this year is to be found one imposing a minimum weight on the body to be used. When the impossible freaks of construction that passed as touring cars in last year's event are recalled, the reason for the rule will be evident. This new rule stipulates that the body must represent at least 15 per cent. of the total weight of the machine, and it raises a question of general interest. Without attempting to fathom the processes by which this arbitrary limitation was fixed, let us see what 15 per cent means. In the case of the light touring car that weighs but 2,500 pounds, all on, this would call for 375 pounds of body. Take a 60-horsepower machine exceeding 4,000 pounds, and practically none of that power falls below this figure with a touring body, it would mean that at least 600 pounds of the total would have to reside in the body. Whether it be possible to carry out such a limitation as this and make it equitable in practice where the entries comprise a diversity of types, ranging from small and light powered cars up to the heaviest machines, remains to be seen.

$1,000,000 SUBSCRIBED FOR THE MOTOR PARKWAY

NEW capital to the extent of $1,000,000 has been placed at the disposal of the treasury of the Long Island Motor Parkway during the past week. Four of the best known financial magnates in the United States have subscribed for bonds to the above amount, and the money is now available, to be used in the resumption of construction work on the Parkway as soon as the frost is out of the ground. Three of the four men who have showed their confidence in the project in such a substantial manner are J. Pierrepont Morgan, William K. Vanderbilt, Sr., and H. B. Hollins, of the Wall street banking house of H. B. Hollins & Co. The bonds draw four per cent. interest, and are issued as an addition to the former issue of $500,000.

The officials of the Parkway have decided to change the route of the course so that it will now terminate on the northern shore on Long Island, within half a mile of Little Neck station. The right of way has been secured, and the change, besides doing away with the numerous grade crossings, called for on the original route, will bring the Parkway into direct communication with the new Blackwell's Island bridge, which has a special roadway for automobiles.

The completion of the work, which is now insured by the new capital, will prove of great value both to the individual automobilist and to the trade, and the well wishers of the enterprise will be glad to know that the project will soon take shape.

COBE OFFERS CUP FOR WESTERN ROAD RACE

CHICAGO, Feb. 9.—Ira M. Cobe, president of the Chicago Automobile Club, has tendered to the American Automobile Association a trophy to be contested for annually in a national stock chassis road race. Mr. Cobe announced his gift at the annual banquet of the Chicago Automobile Trade Association in the course of his speech on "Road Racing in the West," in which he declared that the West is no longer a way station, but has become an important factor in things motoring. The trophy was given at the suggestion of President Hotchkiss, of the A. A. A. No formal announcement has yet been made of its acceptance by the national association, on account of a slight mistake in the deed of gift.

At first Mr. Cobe wished it to be a strictly Western proposition, while the A. A. A. desired to distribute its favors by holding the race in a different section of the country each year. As matters stand now, it has been agreed that the trophy shall be contested for in the West for the first two years on a course within fifty miles of Chicago. The Chicago Automobile Club has a suitable course in mind and has taken the preliminary steps toward securing it. The Governor of Indiana will be asked to permit the use of the militia to guard the course.

The proposed circuit is within fifty miles of Chicago and can be reached by automobile over fine roads, most of which are macadam. Crown Point, a town in Lake County of considerable importance, is on the course, and there are excellent railroad facilities for transporting spectators. There is only one other town on the circuit—Lowell, a village of about 1,000 inhabitants. Here it will be necessary to establish a control; otherwise, there are few flaws to be found. There are no railroad crossings; on the back stretch a ten-mile straightaway will permit high speeds. The course is approximately 22 miles long, and although there are a few bad turns, fast time can be made on the stretches.

Before the echo of Mr. Cobe's speech had died away, N. H. Van Sicklen, the new Chicago branch manager of the Knox, made the first tentative entry. It is his intention to put in either a 40 or a 50-horsepower model, whichever will be eligible under the rules adopted for the contest. Western manufacturers are showing a keen interest in the proposed race, and it is believed that if the race is run here in Indiana there will be little difficulty in securing twenty-five or thirty entries, not only from Western makers but from those of the East as well.

NO RACE THIS YEAR IN ITALY.

PARIS, Feb. 3.—There will be no racing cars this year on the fast Bologna course, where last September Felice Nazarro put up a new world's record for long-distance speeding. As the result of the decision of the Automobile Club of France to kill the Grand Prix, it is impossible for the Italian body to get entries for a race under similar rules, and the inevitable course has been taken of postponing the speed event until 1910. There are hopes of being able to get on foot an aeronautical demonstration with $20,000 in prizes, but at the present time there are more prizes than flyers, and it is doubtful if the Italians can fill their entry list sufficient to justify the holding of the event.

Belgium, which was to have held a race this year under Grand Prix rules, has not yet announced its decision, but it is understood that as the result of the combine by French makers against speed events there will be no attempt to carry the programme through. High-powered automobile speeding is therefore dead throughout Europe for the year 1909.

SAVANNAH WANTS MORE AUTO RACES.

SAVANNAH, GA., Feb. 8.—At a meeting held by the Savannah Automobile Club and the officers of the militia it was decided that Savannah would put in a bid for the next Grand Prize or for any other large race which may be in prospect. The military has promised to lend its aid again, and with the remembrance of its excellent work Savannah expects to make a strong showing.

HOTCHKISS FOR INSURANCE COMMISSIONER.

ALBANY, N. Y., Feb. 9.—The latest news from the executive mansion chronicles the appointment by Governor Hughes of William H. Hotchkiss, of Buffalo, for State Superintendent of Insurance. This appointment was sent to the Senate on Monday and was referred to the proper committee, which will act upon it at an early date. The interest of the automobile world in this appointment lies in the fact that Mr. Hotchkiss is president of the American Automobile Association, past president of the New York State Automobile Association and of the Automobile Club of Buffalo. He is also author of the motor vehicle law of the State of New York, which has been copied by other States.

Mr. Hotchkiss has signified his intention of accepting the appointment, which came to him unsolicited as a result of a long personal friendship with the Governor.

PARKWAY RELEASED FROM BONDS.

MINEOLA, L. I., Feb. 8. —Upon the payment to-day of $10,000 following closely upon a recent payment of $5,000, the Motor Parkway Company was released by the Nassau County Board of Supervisors from its $25,000 bond. This was put up before the sweepstakes and Vanderbilt Cup races last fall as a liability fund to insure payment for damages to roads or for any accidents. The small payment covered the expense of the deputy sheriff who guarded the road, while the large amount to-day is to defray the cost of oiling the roads and other expenses incurred.

NATIONAL ROADS BILL THAT APPROPRIATES $50,000,000

WASHINGTON, D. C., Feb. 6.—A number of good roads bills have been introduced in Congress during the past few weeks, but one of the most interesting is that of Representative Sturgiss, which provides for the creation of a national highways commission and for the construction, improvement and maintenance of public highways, in co-operation with the several States.

The proposed commission is to consist of three commissioners, to be appointed by the President of the United States, and they shall have a practical knowledge of road building and construction. They shall serve for a term of six years each. It will be the duty of the proposed commission to take into consideration, formulate and adopt such plans for the improvement, construction and maintenance of such public highways as shall promote and facilitate interstate commerce and the postal service.

The commission is empowered to institute condemnation proceedings for the acquirement of any land, right of way, or material needed to maintain, operate and prosecute highway improvements.

The bill carries with it an appropriation of $50,000,000 for the purpose of carrying out its provisions. The sum of not less than $500,000 out of such appropriation shall be expended in each State at the rate of not less than $100,000 a year. The $50,000,000 appropriation shall be available at the rate of $10,000,000 a year during the years 1909 to 1913, inclusive. However, no part of this appropriation shall be expended in any State until an equal sum of money shall be appropriated and set apart by said State for highway improvement. Authority is given the Secretary of War to detail an engineer officer of the army to aid the commission in its work.

VANDERBILT CUP COMMISSION SUED.

NEW YORK CITY, Feb. 8.—Jefferson deMont Thompson, chairman, and Frank G. Webb, vice-chairman, of the Vanderbilt Cup Commission were served on February 5 with a summons in an action to recover $500, representing part payment on account of the entrance fee paid to the Vanderbilt Cup Commission by the Mora Motor Car Company, of Newark, N. Y. Senator William W. Armstrong, attorney for the plaintiff, has made all the members of the Vanderbilt Commission parties defendant to the suit, although the two mentioned were the only ones served.

Speaking of this suit, W. W. Burke, manager of the Mora New York branch, said: "When the entry blanks were issued for the 1908 Vanderbilt Cup race, the first entry was made by the Mora Motor Car Company, in the belief that the race would be an international one, as in previous years. The company sent its check for $500, being part payment of the fee of $1,000, specified for each starter. Then came the clash with the A. C. A., and for a time it looked as if the race would be abandoned, owing to the Cup Commission not adopting the rules formulated by the Congress of European Automobile Clubs. Under this uncertain atmosphere the Mora Motor Car Company decided not to go ahead with their special racing car, and demanded the return of their $500."

Referring to the other side of the matter, Mr. Thompson says the suit will be contested on the ground that all conditions for the race were fulfilled by the commission. "We received the entry from the Mora company on May 25," said Mr. Thompson. "The entry was treated seriously and arrangements were made with the Mora as a prospective starter. It was not until September 24 that we were notified that the company had not been able to finish the car and desired to withdraw. Very naturally the commission declined to return the money. The proviso that half the fee must accompany the entry and would be forfeited in the failure to take part in the race was made to prevent just such happenings. Were we to have made conditions that did not include early payment of part of the entry fee, we would have been flooded with entries from concerns that had no intention of competing and desirous simply of obtaining what prestige might accrue to prospective contestants."

CONNECTICUT ENDURANCE RUN THIS SPRING.

HARTFORD, CONN., Feb. 8.—At the last meeting of the Automobile Club of Hartford it was voted to hold an endurance run in May, and although the time is yet quite distant plans for the event are already being made out. Several routes have been suggested. One that seems feasible is from Hartford, through New London, Providence and Worcester and return by way of Springfield. The dealers are said to favor a run of about three hundred miles, to be covered in one day.

FIVE NEW BILLS PROPOSED IN NEW YORK.

ALBANY, N. Y., Feb. 6.—Five bills amending the present New York automobile laws have been introduced by Assemblyman Robinson at the request of the law committee of the Automobile Club of America. The first deals with the exemption of owners licensed in another State. As the law now stands, a New Yorker may take out a New Jersey license and not register at all in New York, with considerable pecuniary saving to himself and a corresponding loss to the New York treasury. The amendment would confine the exemption to non-resident owners.

Another bill would abolish speed limits of a specific number of miles an hour, and instead make everybody on the highways responsible for the maintenance of a rate of speed reasonable and proper under the circumstances. It is modeled on the law at present so satisfactory in Connecticut. All fines and penalties are to be paid over to the Secretary of State to be used for the maintenance of the roads. Local magistrates will be compelled to account for fines and to turn them into the treasury, instead of putting them into their own pockets. The Penal Code is amended by providing that taking out automobiles without the consent of the owner—"joy-riding," to use the vernacular—shall be considered larceny, and making any tampering with an automobile without the consent of the owner a misdemeanor. That some such laws will pass looks like a certainty, the wisdom of which is reflected in the experiences of the past, more particularly in view of the splendid results which followed the adoption of sane laws in other states; notably Connecticut.

ANOTHER EFFORT AT FEDERAL REGISTRATION.

WASHINGTON, D. C., Feb. 8.—Representative Olcott, of New York, has jumped into the limelight by introducing a bill in Congress regulating the operation of motor vehicles within the District of Columbia and the territories of the United States and while regularly engaged in interstate or foreign commerce or the postal service. It is understood the A. C. A. is behind the bill.

Regarding registration, the bill provides that no person shall, after 90 days following the day on which the proposed law takes effect, operate any motor vehicle unless it shall have been registered by filing with the Secretary of Commerce and Labor at Washington, D. C., a statement containing the name and address of such owner, a brief description of the machine, including the name of the maker, the number affixed by the maker, the style of the car, the character of the motive power, and the horsepower of the car. A filing fee of $2 is required.

A motor car manufacturer or dealer may register one vehicle of each style or type manufactured or dealt in.

It should be understood that this proposed law has no chance whatever of securing any attention during the present session of Congress.

CHIT-CHAT FROM THE CLUB CENTERS

LONG ISLAND A. C. PREPARED FOR BUSY SEASON.

BROOKLYN, N. Y., Feb. 8.—At a special meeting of the board of governors, held recently, the president of the Long Island Automobile Club appointed the following committees: Law and legislation, Wm. Payson Richardson, chairman; Hon. Eugene M. Travis, Charles C. Cluff, A. A. Hovell and Herbert G. Andrews; entertainment, Edwin Melvin, chairman, W. C. Colson and Louis T. Weiss; technical, Louis T. Weiss, chairman, and F. G. Jahn; membership, Allen C. Alderman, chairman, W. L. Webster and Wm. G. Morrisey; contest, A. R. Pardington, chairman; auditing, J. H. Emanuel, Jr., chairman, W. H. Caldwell and W. L. Webster; garage, Wm. Schimpf, Frank G. Webb, Herbert G. Andrews, Charles C. Cluff and W. H. Caldwell; good roads, Charles Jerome Edwards, chairman, Cleveland Litchfield and Robert Magaw. Wm. Payson Richardson was nominated as the club's representative to the New York State Automobile Association.

These appointees are all well-known enthusiasts identified with the club, but probably the greatest achievement in the history of the club was the passage of the Cypress Hills Cemetery bill, authorizing a parkway from King's to Queen's county. This work was done by the law and legislation committee, under the guidance of Mr. Richardson, who is reappointed in recognition of the good work of the past year.

BRIDGEPORT CLUB IN FLOURISHING CONDITION.

BRIDGEPORT, CONN., Feb. 8.—As a result of the campaign instituted by President Sperry, of the Automobile Club of Bridgeport, to not only increase the present membership but to arouse interest among many of the present members, the recent meeting of the board of directors marked the increasing of the roll by 50 new names. This brings the total up to about 225 with brilliant prospects of passing the 300 mark during the summer season.

As indicative of the renewed life infused into some of the members, over 200 with their friends were present at the smoker given at The Stratfield. The program, consisting of moving pictures of the Savannah and Briarcliff races, some vaudeville stunts by artists from Poole's Theater and a buffet lunch served by the hotel management. Arrangements have been made with the management of this new hotel to hold club meetings there.

At the last meeting of the board of governors, chairman Ralph M. Sperry of the contest committee was authorized to begin preparations for the four annual hill climb to be held on the morning of Decoration Day. The place has not yet been definitely decided upon, but it will be either Sport Hill in Easton or Snake Hill in Mill Plain.

PROPOSED MOTOR CLUB MAKES HEADWAY.

BOSTON, Feb. 8.—Last week when the tentative meeting of prominent members of the automobile fraternity was held with the idea of advancing the proposed new organization, L. R. Speare, president of the Bay State Automobile Club, clearly depicted the fact that just the facilities which the new organization would have to provide awaited but fitting use under conditions involving that strength which unity always signifies, and he further stated that if the present officers of the club fell under the ban, they would gladly make way for agreeable successors. The meeting of the charter members of the new organization, comprising some 50 prominent names, fell in with the plan as suggested by F. S. Corlew and the name of the new organization is to be the Boston Motor Club. The committee on rules and by-laws was appointed and is made up of W. A. Thibodeau, chairman; C. E. Fay, J. B. Sullivan, Jr., F. S. Corlew and Arthur P. Teel. The committee on club quarters was named, and consists of W. A. Shafer, chairman; F. H. Ayres and R. R. Ross.

QUAKER CITY AUTOISTS HAVE ELECTION.

PHILADELPHIA, Feb. 8.—The annual election of the Quaker City Motor Club last Tuesday night was the closest in the history of that hustling organization. After a stirring campaign the present president, P. D. Folwell, was beaten out for re-election, by a small margin, by L. D. Berger. The new president is also the presiding genius of the Motor Shop, which formerly handled the Stearns and Oldsmobile, the latter car, however, now being represented here through a branch house. M. E. Brigham for first vice-president; G. Douglass Bartlett for second vice-president; A. T. Stewart for treasurer, and Harry C. Harbach for secretary, were unopposed. There was a counterpart of the presidential contest in the fight for places on the board of directors, of the twenty-six nominees the following being elected: Fred C. Dunlap, R. E. Ross, G. H. Gantert, J. R. Overpeck, W. D. Donnelly, E. H. Lewis, Richard Sellers, A. T. James, and Max R. Greene.

After the pools closed at 8 o'clock there was a stag smoker and luncheon in the banquet hall. The majority of the out-of-town tradesmen and lay visitors who were in town to attend the automobile show were among the numerous guests.

Rumors have been prevalent hereabouts for the past fortnight that a sizeable clique in the club were not satisfied with its management, claiming that the trade element, being in entire control, subordinated the social features to the advancement of their own particular ends. At the same time the publicity committee of the Century Club, which was formerly the Century Wheelmen, the crack local organization during the cycling boom days, began to ring the changes on their intention of transforming their organization, which is now strictly a social club, into an automobile club. While no open defection has as yet materialized, the Q. C. M. C. officials have thought the matter sufficiently serious to come out in a statement denying the rumor and challenging the production of the list of members (said to be 35 in number) who were contemplating resigning.

The rumor, even if unfounded, will in all likelihood make the Quakers bestir themselves and take the initial steps toward establishing a home of their own.

NORRISTOWN CLUB'S SECOND ANNUAL RUN.

NORRISTOWN, PA., Feb. 8.—The second annual endurance run of the Norristown Automobile Club will take place on dates yet to be selected in the latter part of April. It will be a two-day affair, and although no objective point has been positively decided upon, it is almost certain that Sunbury will be selected. This would make a round trip of about 300 miles. While the roundabout route via Harrisburg would furnish the better going, that by way of Shamokin is more direct. A compromise may be effected by going one route and returning by way of the other.

At last week's meeting the following officers were placed in nomination: President, John H. Rex; vice-president, Isaac M. Smith; treasurer, Lewis E. Taubel; secretary, William B. Hart; assistant secretary, Earl Wentz.

GERMANTOWN A. C. HOLDS ANNUAL BANQUET.

PHILADELPHIA, Feb. 8.—One hundred and four members and guests sat down at the annual banquet of the Automobile Club of Germantown last Saturday night. Bright lights in professional and business life, besides many prominent automobilists, were present. President Robert P. Hooper acted as toastmaster, and among those who responded to toasts were E. T. Stotesbury, Senator D. Webster Grim, of Bucks county; Senator William C. Sproul, of Chester; Charles T. Terry and F. H. Elliott, representing the A. A. A.; Paul C. Wolff, of Pittsburg; Powell Evans, president, and F. Boyer Davis, secretary, of the Automobile Club of Philadelphia; W. N. Glasgow, L. P. Wright, Harrison Townsend and James F. Hope.

SKY WARS SEEN THROUGH MAXIM'S EYES.

Hudson Maxim, in a well-put talk, at the Automobile Club of America, New York City, delivered on the night of February 9, made the point that Congress should appropriate $5,000,000 for "aeronautics" instead of balking at a paltry $500,000. It was "aeronautic night" at the A. C. A. and the meeting developed wide interest, which was of a character to indicate that the world is moving faster than Congress seems to appreciate, and as Hudson Maxim aptly put it: "Congressmen look upon the United States as a sort of a big raft bound to float along in the current of prosperity somehow." But the climax of Mr. Maxim's keenness lent zest to the whole discussion when he said, "they (Congress) believe that one's interest, like charity, should begin at home, and thus it is that we have more real stategraft than we have statecraft."

Representative Butler Ames, of Massachusetts, whose work in the aeronautical line has attracted wide attention, in his reply to Mr. Maxim, said: "All that has been said about the necessity for making preparation in this country for meeting the fleets from the skies is true, but as a member of Congress I am not willing yet to say that we shall not have an appropriation this year. There is still a chance in the Senate, and I hope and believe that before the session ends we shall have the full appropriation and in future years much more."

MAXWELL GETS NEW FACTORY AT TARRYTOWN.

Tarrytown, N. Y., Feb. 8.—Rumor has been current several weeks that the Maxwell-Briscoe Motor Company, of this city, has been trying to get control of the Ingersoll-Rand-Drill works here. Official confirmation of the report comes from Secretary F. D. Dorman, of the Maxwell-Briscoe Motor Company, who, when asked in regard to the facts, said: "Yes, it is true we have leased the Rand Drill Works to take care of our overflow. Our business has grown so fast that we have utilized nearly all of our available space, and it was impossible to put up new buildings on the premises fast enough. We will take possession immediately.

Locally, the acquisition of the drill works is considered a great thing for Tarrytown. As the Maxwell-Briscoe people employ about 1,000 men at Tarrytown alone, with a pay roll averaging $12,000 weekly, this is simply another step in the company's policy of expansion, which adds additional factory space to the present chain of three factories. For 1909, the combined output of the Maxwell factories will approximate 12,000 cars. For 1910, with the increased facilities just obtained, the present plans call for an output of about 20,000 Maxwells. Superintendent Pretz has already started a gang of men at work in the new building, which is proof of how sorely the additional space was needed.

NEW JERSEY LICENSES TRANSFERABLE.

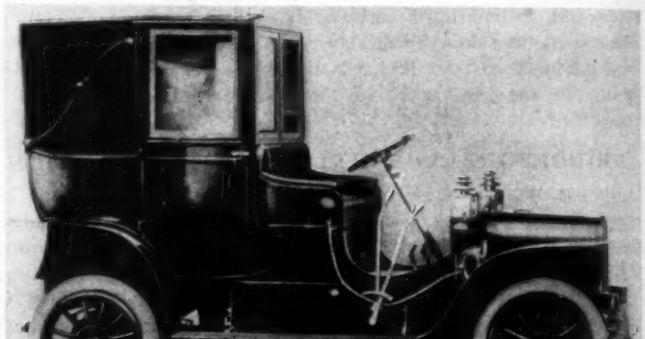
Trenton, N. J., Feb. 8.—As the result of an application by A. B. LeMassena, local agent of the Department of Motor Vehicles of New Jersey, at Newark, regarding the legality of transferring a number pad from a car which had been in its owner's possession but a day or two, and had never been used, to another machine, subsequently acquired, Commissioner J. B. R. Smith has made a general ruling which reverses his former stand on this point. Hitherto, Commissioner Smith has held that a license, when once issued, should not be transferred from the car to which it was originally given. If an owner sold his car he could also sell his license, the transfer being validated by the payment of a fee of $1 to any State auto agent, this construction being put upon the Jersey law immediately following its adoption in 1907. Under the new ruling, upon payment of a transfer fee of $1, it will be possible to use the old license pad upon the newly acquired machine. Commissioner Smith has devised a special form of transfer card, with which the agencies are being supplied as fast as the State printers can turn them out. These call for practically the same information.

FRANKLINS WILL DO SERVICE IN PITTSBURGH.

Taxicab service is of a character such as to demand the consideration of designers to an extent far in excess of that usual to automobiles in general, for the reason that the service is continuous, on streets of every character, under the charge of chauffeurs of no great skill. The cars must stand in the street, in the cold of winter, for hours at a time, and economy of fuel as well as maintenance of machinery indicates that the motor should be brought to rest whenever possible.

If air-cooling is taken advantage of, it is then that the cold weather is more of an aid than a detriment; at all events the weather will not effect the service which can be rendered, and the cost of upkeep of the machinery will be lowered since the life of a machine can be counted in revolutions of the rotative members of the same. True, the thermal efficiency of a motor is dependent upon a dozen of considerations, and again, the life of the same is not so low that counting the revolutions of the rotative members becomes as a necessity. Even so, it is desirable to count all the influences and eliminate as many as possible of the negative quantities.

It will come as no surprise then to learn that the "Franklin" air-cooled motor is to be used at Pittsburgh; a location demanding every consideration from the point of view of inclement



Franklin Air-Cooled Straight Front Landaulet.

weather, to say nothing of the steep ascents and in divers ways; roads which demand more than a little consideration at the hands of designers of automobiles to be used in that locality. The illustration here afforded is of the new Franklin taxicab as it will be used at Pittsburgh, twenty of which are to be put into service next month.

The body of the cab is of the "landaulet" type; the top folds back, and in every way the design favors stability coupled with style and an inviting air. The exterior finish is in Quaker green, and the interior is in dust-proof light cloth and leather. The chauffeur's seat is in green leather, and by way of some contrast the green of the body is relieved by molding and underbody work in black.

The chassis frame is of laminated wood (usual Franklin practice), noted for its strength, lightness, and the fact that resiliency is present in the frame to a marked extent. This is a question which may not be quite well understood by many on the ground that wood is not so much used in automobile work, and in the earlier days, when laminating was not resorted to the defects of the wood were to be feared. In the Franklin plan (in which the frame is laminated) the well-known qualities of wood can be taken advantage of without in the least fearing that a defect in the wood will develop to the detriment of the car. In other ways the new car is on a basis which is bound to make the record of performance in Pittsburgh an epoch-making event.

The air-cooled motor is of the well-known Franklin make, using "concentric valves," and the usual Franklin means of wiping away the heat, water or other liquids failing to play a part.

News in General

Mrs. J. W. Gogarn in Her Boon Companion Reo Model G.

The owner has driven this car over 3,000 miles over the roughest roads, and finished "perfect" in the late "Long Island Mechanical Efficiency" wrangle. Mrs. V. V. Board, Mrs. G. G. Williams, and Mrs. E. J. Kincaid make up the rest of the "winter scene" on this occasion.

Michelin's Views on the Care of Tires.—A very large proportion of autoists habitually carry spare shoes with them, or at least have one or two spare shoes in their locker at the garage. In speaking of the care of shoes, M. Michelin says: "A casing which is not in use must be carefully kept away from light and heat. It is preferable to keep it in a place which is cool, without being damp, as dampness is bad for rubber casings, even for those which are being used, although they are less sensitive to light and heat than tires kept in one place. Spare shoes should never be permitted to lie on the ground, or on cement floor, but should be protected by a curtain and must be carefully kept away from any fat substance. Casings in use require more care, as the shoe is constantly receiving numerous small cuts from its contact with the ground. These are sometimes almost invisible and others are large enough for the driver to see, but so small as to be neglected. They open the door to dampness and foreign bodies, which are certain to injure the tire. Dampness rots the lining and invites blowouts, which are also caused by dust being forced through a slight cut in the tire or by the entrance of small particles of ground which become bunched together beneath the outer rubber. The result is the accumulation of a hard body which cuts one ply of fabric after another until the casing explodes. It is, therefore, necessary to pay close attention to these cuts, and in case of Michelin tires to cure them with Michelin Mastic. This closes up many cuts which would otherwise become serious wounds, and a little attention of this sort will lengthen their life very materially, and will procure a length of tire life which will surprise the owner.

Pierce School Plans for 1909.—Announcement has been made to all dealers in Pierce Arrow cars of the plans for the 1909 school of instruction conducted by the Pierce Arrow Motor Car Company, of Buffalo. The plans for the present year are far more comprehensive than any the company has made heretofore, and include not only classes for chauffeurs and garage men, but also a special period during May for owners exclusively and one during April for colored men. The classes begin February 15 and each one lasts two weeks. Expert mechanics are in charge of the work of instruction, which consists of detail lessons regarding the car, its assembly, maintenance and driving. The time between May 3 and May 22 has been set aside for the instruction of owners who intend to drive their own cars, and the work of the instructors during that time will be devoted entirely to them. The class of colored men will open on April 5 and close April 17, and during that period the school work will be for them altogether.

National After 10,000-Mile Record.—Early in May or June the National Motor Vehicle Company, of Indianapolis, Ind., will go after a record, which is nothing more or less than an attempt to do 1,000 miles every day for ten consecutive days. This trial will be made possible by the new two-mile motor speedway track, which has been promised for completion early in May. The trial will be made with a single car, of course, and will be under official observation. The grind will go night and day for 240 hours, with tire repairs or repairs of any kind to be made in running time. The National people feel fairly confident of reaching the record of 10,000 miles in ten days, since some years ago they made a world's record of 1,094 3-16 miles in 24 hours. If the effort is successful, it will certainly be a striking demonstration of the sturdiness of the car, for this would mean the terrific clip of 50 or more miles per hour kept up for 10,000 miles. Four different crews will be used in relays for the trial.

"Grease vs. Oil."—An attractive brochure is printed by the Keystone Lubricating Company, Philadelphia, bearing the above title and containing instructive comparisons of the efficiency of the two great types of lubricant that are used to grease the wheels of industry. Some of the inner reasons for the extensive use of the liquid lubricant, oil, at the present day, are interestingly explained; and the evolution of Keystone grease, stated to be a pure, natural product, free from the harmful ingredients and objectionable features, are convincingly set forth. A feature of the argument for Keystone grease as an ideal lubricant at minimum first cost and operating cost, is an account of exhaustive tests made by the head chemist of William Cramp & Sons, the Philadelphia shipbuilders, on the chemical constitution and mechanical and anti-friction qualities of the product. This booklet, of which many thousands have been printed and distributed, may be obtained gratis on application to the home office of the company, or to any of its agencies.

Wonderful Tire Mileage.—As a slight indication of the wonderful increase in tire building, is cited the case of an Indiana autoist, who in a roadster got a wonderful mileage out of his tires. Forty thousand eight hundred and seventy-two miles on one set of tires with no trouble beyond two punctures, is the record claimed by J. L. Martin, of Fowler, Ind. They are the largest figures for a single set of its product ever reported to the Diamond Rubber Company, but analysis appears to verify them. Looking into the matter brought out the fact that Mr. Martin made the mileage reported within a period of 18 months, according to the record kept by a reliable speedometer. The owner, being in the windmill business, drove constantly in his daily work, in addition to evening and Sunday driving for pleasure. His own estimate, aside from the speedometer figures, place his average daily running at 75 to 100 miles.

Cadillac Gets Another World's Record.—Up in Detroit they are not satisfied to have the greatest number of factories and the most employees, the largest output, and all that sort of thing, but now must needs make factory production records for the whole world to gape at. The Cadillac Company recently did themselves proud when 74 complete cars were turned out and shipped in a single day. This sounds simple, but reducing it to minutes, this means a car every 12 minutes for 16 consecutive hours. This record-breaking feat was made necessary by the unusual pressure brought to bear by the selling agents, all of whom are calling for cars and more cars. The Chicago dealer incidentally made another world's record when 225 orders were sent in in one day. It behooves manufacturers to sit up and take notice now, or the Cadillac'll get 'em!

Fire Company Adopts Simplex.—A big deal in automobile chasses was put through in New York City recently when the American-La France Fire Engine Company, of Elmira, N. Y., contracted to take a good sized portion of the Simplex Automobile Company's output. The Elmira concern is the largest in the country manufacturing fire-fighting apparatus, making about 80 per cent. of all the fire engines produced to-day. After much investigation, the company decided that the 50-horsepower Simplex was best adapted to fire department requirements, combining as it does strength, power, speed, and flexibility of manipulation, with standing-up qualities. These chasses are to be fitted with regular chemical fire engine equipment, and in years to come will doubtless save much property from destruction.

More Up-to-Date Sales Methods.—One of the pronounced tendencies of the day is the matter of changes in selling methods, all firms attempting to keep right up to the minute in this respect. The Gabriel Horn Mfg. Company, Cleveland, O., has just made a very important change in its sales methods. Heretofore it has sold its products not only to manufacturers, jobbers and dealers, but to individual users as well. Now it is thought more economical to make shipments in quantities direct to its own representatives, and this has made it wise to establish exclusive agencies in all the cities of the country. All sales hereafter will be made

through these agents, who will be responsible for seeing that Gabriel products are properly put on cars and work to the owner's satisfaction.

Can't Buy a Second-Hand P. & S.—According to the Palmer & Singer Mfg. Company, of New York City, two so-called bargain hunters trying to buy Palmer & Singer "Four-Forty" limousines at a reduced price were unable to do so. The list price of $5,000 was more than they cared to pay, and they made an earnest effort to find other "Four-Forty" owners in order to buy their cars second-hand. They easily enough obtained the names of a number of "Four-forty" owners under the plea of wishing to ask them how their cars were performing, and it gladdened the hearts of the sales force that every owner refused to sell his car on any terms whatsoever. The two purchasers, utterly unable to get "Four-Forty" cars in the second-hand market, returned to the big Broadway house and purchased new cars.

Races on the Coast.—The first automobile race of the year will be a double century endurance contest around the San Francisco Bay. This will be held on February 7, the first car leaving Golden Gate and Van Ness avenues at 6:30 A.M. The checking points will be at Oakland, San José and Garden City. Thirteen cars have already entered, including three Buicks, two Tourists, one Auburn, one Rambler, one Reo, a Stoddard-Dayton, a Mitchell, an Oakland, an E-M-F and a Studebaker. The roads are in such condition that an all-day job is expected by the competing drivers.

Philadelphia Salesmen Dine.—To show his appreciation of the efforts of the hard-working sales force of the Auto Sales Corporation, of Philadelphia, President Percy Neel, of that concern, last Thursday night banqueted them at the Cedar Park Driving Club. Bert Maucher, "Bill" Street, Ralph Cook, George Brooks, L. S. Julien, Bert King, Albert Kirk, Roy Hagerling, Ed. Burnshaw, J. B. Dickson, Morris Penrose and others were on hand, although a sudden illness prevented the attendance of President Neel.

Smashed Denver Record.—The automobile road record from Denver to Colorado Springs was broken recently by Wesley Smith, driving a 6-70 Thomas Flyer. The old record, 1 hr. 58 min., was held by Harold Brinkler. Smith's new mark of 1:50:32 clips 7½ minutes off of this. The announcement of this feat has stirred up a lot of excitement, and it is understood that Brinker will immediately go after the new mark.

Monthly Meeting of A. S. M. E.—The next monthly meeting of the American Society of Mechanical Engineers will be held in New York City February 23, the fourth Tuesday of the month, instead of the second Tuesday, as usual. The subject of the evening's discussion will be "Safety Valves," a brief paper by Frederic H. Whyte, mechanical engineer of the New York Central Railroad lines.

Factory Proposed in Savannah.—One of the results of Savannah's Grand Prize race may be seen in the recently announced formation of a company to go into the business of automobile manufacturing. C. P. Henderson, one of those interested, will soon leave Savannah on a tour of the South to find what type of car is most desired there. It is hoped to have the factory in operation by the end of this year.

Banquet for Hartford Dealers.—The Allyn House, Hartford, will be the scene of a good time on Tuesday evening of show week, when the Hartford Automobile Dealers' Association will hold its annual banquet in the Automobile Club quarters.

IN AND ABOUT THE AGENCIES.

Hoyt Electrical Works, New York City.—A complete stock of the electrical instruments manufactured by the Hoyt Electrical Instrument Works, of Penacook, N. H., will hereafter be found in New York City at 1931 Broadway, where a branch office, in charge of R. V. Sutliffe, as manager, has been opened.

Firestone Tires, Cleveland.—On March 1 the Firestone Tire and Rubber Company will open a branch office in Cleveland. For this purpose the company is remodeling the storerooms at 1918-1922 Euclid avenue, in the heart of the automobile row.

Nadall Rims, Cleveland.—The Nadall Manufacturing Company, of Chicago, makers of demountable rims of that name, have appointed Way, Mitchell & Company its Cleveland agents. Their address is 1120 Euclid avenue.

Columbia, Pittsburg, Pa.—Dr. R. E. Dinger, president of the Central Automobile Company, has returned from the New York shows with the news of his appointment as agent for the Columbia line.

Palmer & Singer, Philadelphia.—William and Charles Miller, 441 North Broad street Philadelphia, have been appointed agents for the Palmer & Singer for the Quaker City and adjacent territory.

Franklin, Oakland, Cal.—The Consolidated Motor Car Company, which has the San Francisco Franklin agency, has established a branch at Telegraph avenue and Twenty-second street, Oakland.

Hoffecker, Cleveland.—The Hoffecker Company, speedometer manufacturers, has opened a local branch at Euclid avenue and East Nineteenth street, with J. E. Strater as local manager.

Rauch & Lang, Milwaukee.—Welch Brothers Motor Car Company, Seventh and Grand avenues, Milwaukee, have added the R. & L. electric to its line of cars, which is headed by Packard.

Nadall Rims, Canada.—The Dominion Auto Company, Ltd., of Toronto and Montreal, Canada, has taken over the sole rights of the Nadall demountable rim, on a royalty basis.

Stearns, San Francisco.—C. S. Richardson, manager of the Reliance Automobile Company, has just closed a deal whereby his firm gets the agency for the Stearns.

Moon, Providence, R. I.—C. M. Linton, who has the Jackson and Welch agencies here, has added the Moon to his list.

Jackson, Minneapolis, Minn.—The La Crosse Implement Company has been appointed agent for the Jackson car.

Kisselkar, Newark, N. J.—Welden & Bauer have been appointed State agents for the Kisselkar.

Elmore, Spokane.—Smith & Rockwell have taken the local agency for the Elmore.

RECENT BUSINESS CHANGES.

Levi & Hipple Motor Company, Chicago, has removed from the Wabash avenue site to 1467-69 Michigan avenue, where the new models of the Lozier, Autocar and Chalmers-Detroit lines are now on exhibition.

Kellogg Mfg. Co., Rochester, N. Y.—This is the new name of the Wray Pump & Register Company, well known to the trade as manufacturers of auto pumps and registers under the Kellogg patents.

Supplementary Spiral Spring Company, New York City, has removed to 215 West Fiftieth street, just off of Broadway.

PERSONAL TRADE MENTION.

Jesse Froehlich, treasurer of the Times Square Automobile Company and managing director of the Benz Auto Import Company of America, sailed for Europe on the *Mauretania* February 3, and will visit the Benz Motor Works at Mannheim, Germany, to arrange for an immediate shipment of Benz cars. It is an interesting fact that on January 30 Mr. Froehlich sold three Benz cars personally in one day, one being to Herman Ridder, proprietor of the New York *Staats-Zeitung* and president of the Publishers' Association of New York.

Marcus I. Brock has been appointed manager of the Thomas Motor Cab Company, which is fastered by the E. R. Thomas Motor Company, of Buffalo. He is well known in the trade, having been sales manager of the Autocar Company and prior to that time assistant general manager of the A. L. A. M.

F. M. Germane has been promoted to assistant general manager of the Standard Roller Bearing Company, of Philadelphia, his former place as sales manager being filled by T. J. Heller. F. W. Lawrence has also been appointed Western representative, with headquarters in Chicago.

A. R. Pardington, vice-president and general manager of the Long Island Motor Parkway, Inc., has gone to a sanitorium at Mt. Clemens, Mich., to take the rest cure. He will return to New York in time to superintend work on the parkway.

V. M. Palmer has accepted the position of chief engineer with the Selden Motor Vehicle Company, of Rochester, N. Y. He was formerly with the Pope Mfg. Co. at the Hagerstown works.

Louis E. Elmer, the Hartford, Conn., agent for the Ford, who has been confined to the hospital for some time, is now able to be about a little each day. His many friends will be gratified to learn of his improvement in health.

Thomas W. Henderson, manager of the Detroit Winton branch, was married to Miss Maud Nicol Hawley, of that city, recently. Mr. and Mrs. Henderson are now in the East on their bridal tour.

E. V. Stratton has succeeded Frank Yerger as manager of the Philadelphia branch of the Studebaker Company. Mr. Stratton was formerly sales agent for that company in New York State.

H. Nelson Dunbar has accepted the position of sales manager with the Gabriel Horn Mfg. Co., of Cleveland. He was formerly with the Packard Motor Car Company, of Detroit.

George Daley, a well-known Philadelphia automobile writer, has joined the sales force of J. C. Bartlett, who recently took on the Quaker City agency for Woods electric vehicles.

Francis H. Warwick, formerly of New York City, has been placed in charge of the sales department of the Colburn Automobile Company, Denver, Col.

DEATH OF S. R. BALL.

S. R. Ball, head of the famous decorating firm of S. R. Ball & Co., New York City, died very suddenly at his home on February 9. This concern has made a specialty of show decorations and have been responsible for the fine appearance of the Grand Central Palace and Madison Square Garden automobile shows for many years back, as well as numerous other automobile shows in Philadelphia, Pittsburg, Kansas City and elsewhere. He will be missed by a host of friends and business associates.

INFORMATION FOR AUTO USERS

"Rist-Fit" and "Ventilated" Gloves.—Comfortable and classy automobile gloves for all seasons characterize the output of the Morrison-Ricker Mfg. Co., of Grinnell, Ia., and "Rist-Fit" and "Ventilated" gloves have become popular and

ADJUSTING THE "RIST-FIT" GLOVE.

well known the country over. One type of glove has a smooth strap leather cuff made from choice "Reindeer" and black colt skin of highest wearing quality, and another has a dignified gold initial in Old English. The "Rist-Fit" is a patented device which allows the glove to be drawn snugly at the wrist, keeping the cuff up and excluding dirt, snow, etc. Its application is shown in the illustration. The Morrison-Ricker Company also makes one-fingered mittens for winter use, which are finding much favor with some drivers.

The gloves for winter use are wool lined, lamb lined, and squirrel lined. Those for spring and summer are unlined or silk lined, and have the "Ventilated" back, which consists of rows of tiny perforations too small to admit dust, but which will allow air to enter and keep the hands cool and dry.

Hill's Automobile Specialties.—The Hill Dryer Company, of Worcester, Mass., announces in its catalogue No. 9 an exceptional list of specialties for the automobile which will appeal to the discriminating buyer. These specialties are of the nature of drip pans, waste cans, gasoline measures and funnels. The first mentioned is a drip pan which instead of being turned in at the rim is

HILL'S COMBINED MEASURE AND FUNNEL.

turned outward, and rolled in such a manner that the seam comes on the under side of the pan. This method leaves no cracks around the edge of the top of the pan that are necessary to patch with solder in order to make it water-tight. It is made in two sizes. In oily waste cans the company make two styles, the full, round type in three sizes, and a special half-round type in one size, all of which are fitted with special self-closing covers.

A combined measure and funnel, the design of which is shown in the illustration, made of extra heavy tin, is made in four sizes, and fitted with fine brass strainers at a slight additional cost. A special line of funnels, suitable for the automobilist is also manufactured, in various designs to meet requirements. All of these funnels are fitted with fine brass strainers and movable hoops to hold chamois when chamois is used to

HILL'S FLAT FUNNELS—TWO STYLES.

separate any water that may be present in the gasoline. It is interesting to note that the shape of the funnel is elliptic, thus affording the exact shape of "spilling" liquid, and reducing the space required in the other plane.

Steering-Wheel Grip.—Wet and rainy weather prevailing just at present should stir up a considerable interest in the matter of steering-wheel grips. One of the best of these is the Alpha, made by Parker, Stearns & Company, New York City. This has a roughened tread, if it

ALPHA STEERING WHEEL GRIP.

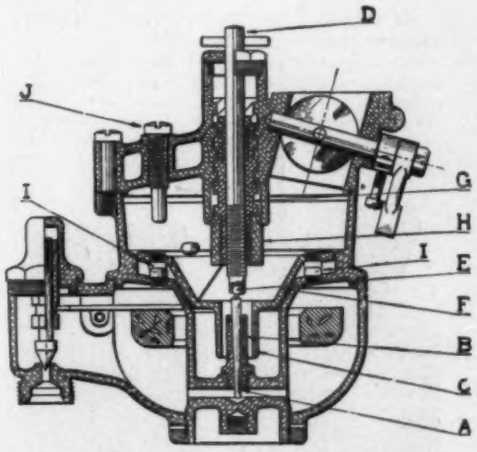
may be so called, and is made of rubber, either black or red being optional. The inside portion is open and provided with eyelet holes, so that it may be laced up tight. When this is done a roughened surface, upon which the hands will never slip, is assured at all times regardless of weather. In the interest of safety every machine should have something of this nature added to its equipment where the original steering wheel had a smooth surface.

Don't Lie Down in Grease.—For the benefit of garage men and others who have of a necessity to lie down underneath a car while working on the mechanism, the Portland Garage Company, Portland, Me., makers of the Repairman's Couch, send this message: "Don't lie down in grease or oil." This couch is made very low and light, and runs on casters, so that it may be utilized under any car anywhere. The head-rest por-

PORTLAND REPAIRMAN'S COUCH.

tion is adjustable, so that the position of the head may be varied to work to the best advantage. The body of the couch is fabric but tightly stretched so as to be springy and easy to lie upon. The head rest, on the other hand, is upholstered so as to be unusually comfortable. In fact, it is almost possible to imagine that after the long use of this, the men might get to like working under the cars.

New Holley Carbureter.—After eight months of constant experimenting, G. M. Holley, of the Holley Brothers Company, Detroit, determined to his satisfaction the exact amount of gasoline and air required by a motor under all conditions of speed and load, and found the following chief essentials: A high vacuum around the nozzle for starting; a perfectly uniform mixture at all speeds, except hill climbing with wide open throttle; no limit as to motor speeds, and a device that would maintain all conditions constant. The accompanying illustration shows a sectional view of a carbureter that has been developed by the Holley Brothers Company to fulfil these conditions. The regulation type of concentric float chamber is employed, but the needle is made adjustable for raising or lowering the gasoline level. The mixing device consists of a taper needle for admitting gasoline *A*, sliding in the taper nozzle *B*, surrounded by the small strangling tube *C*, the needle *A* being con-



SECTION VIEW OF HOLLEY CARBURETER.

nected to the adjusting rod *D* by the ball joint *E*, which eliminates side thrust and wear in the nozzle *B*. The air valve consists of the strangling tube *C*, and the taper and flanged body *F*, the coarse threaded screw *G* being fastened to the air valve at *H*. The rod *A* and the valve *F* move together, according to the requirements of the motor. *I-I* are bottom stops; *J* is the upper stop. It will be apparent from an inspection of the sectional view in connection with the above description that known quantities are being dealt with

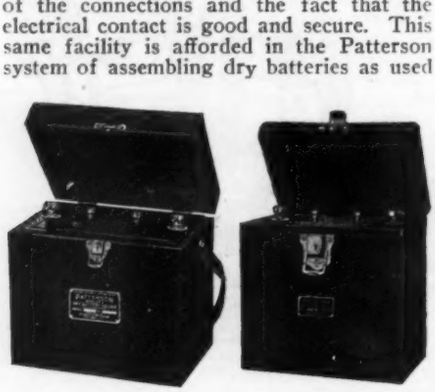
in making adjustments, and once the proportions of the taper needle and the air valve are right they will stay so for good. No springs being employed, conditions in the carbureter remain constant.

New Style of Brass Auto Horn.—The Automobile Supply Manufacturing Company, Brooklyn, N. Y., has added another style of horn to its line for the coming season. The latest Nonpareil horn, as

THE LATEST NONPAREIL HORN.

shown in the illustration, is distinctly novel in design and has a far-reaching, deep, penetrating tone. Letters patent No. 39,746 were issued to the inventor, Louis Rubes, on this horn on January 5 of the present year. Mr. Rubes is the president of the above-named company, and six years ago he started the business with a working force of seven men, since which time it has grown to such an extent that now 246 men are employed, and, besides the Emerson Place and Classon Avenue plants in Brooklyn, a new factory, located at 220-224 Traffle Place, that city, has been added to meet the demand. At the present time the company is turning out 3,000 horns a week. The new horn illustrated above is meeting favor with the trade and bids fair to be one of the most popular sellers among the company's productions.

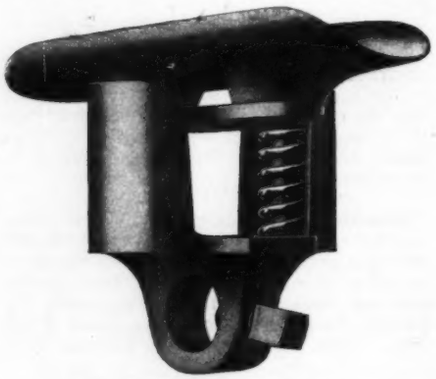
Patterson Wireless Dry Battery Holder System.—The great ease with which incandescent lamps are screwed into sockets is only equaled by the permanence of the connections and the fact that the electrical contact is good and secure. This same facility is afforded in the Patterson system of assembling dry batteries as used



PATTERSON BATTERY BOXES E AND F.

in ignition systems on automobiles, and it is plain to be seen that the same method allows of the quick alteration of the relations of the cells of battery, enabling the motorist to take advantage of (a) all the cells in series for the maximum voltage, (b) multiple series connections of sets of four cells in such a way as to realize the voltage of four cells and the added capacity of sets of four, as eight, twelve and so on. The system comprises a substantial moulded composition (rubber) plate, in which is incorporated the component members of the screw tops on the respective cells. The receptacles for the cells are so devised and arranged as to enable a "dead" cell to be removed without opening the circuit. Then, there is an entire absence of wires and other loose details which every autoist regards as a nuisance. It is also a fact that the cells of battery are held in secure and rigid relation by the "plate," with the result that the cells are not chafed, which is beside the fact that intercell leakage is prevented in the same way. The sets of battery come in several selections as to size. With substantial and ornamental cases the appearance is up to a high standard of art and utility. Stanley & Patterson, 23 Murray street, New York City, are the manufacturers of the Patterson "wireless," and the reward for business acumen is by way of a large list of satisfied customers, ever expanding.

Vehicle Top Support.—"It is the little things that count." In other words, they count for comfort and satisfaction if they are right, and in the case of top supports it is assured annoyance in the absence of a suitable design, since broken bows in-



MORAN'S VEHICLE TOP SUPPORT.

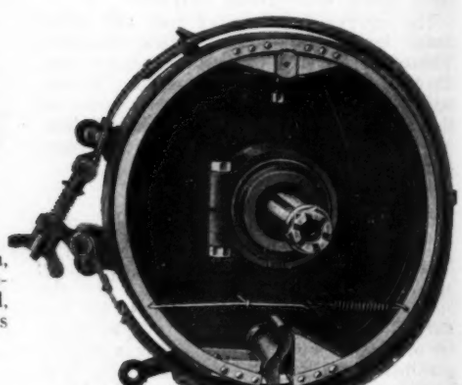
terfere with the results. Stephen J. Moran, of Cambridge, Mass., makes a top support (patented) which is here illustrated, and, as will be seen at a glance, it has merit as its companion.

A Wrench for Unhandy Places.—About the meanest situation for a man to find himself in is with a nut to tighten and to have a wrench which for some reason or other cannot be used to tighten it. To cater to this business and to make a wrench that can be used anywhere, the Lowell Wrench Company, of Worcester, Mass., has produced the "Multo" autowrench. This has several features worthy of individual mention, thus it is a ratchet arrangement. This allows of tightening up nuts in a situation where the swing of the handle is limited. Another idea is that it is a socket arrangement, fourteen sockets being provided to accommodate the ordinary range of nuts. This is sold in a neat box with the fourteen sockets and the ratchet handle, the wrench being sold only with the unbroken set of sockets. The illustration shows a "ghost" view of the tool box with the ratchet and full set of sockets.

New Timken Roller Bearing Axle.—In line with the constant improvement in rear axle construction is the latest product of the Timken Roller Bearing Axle Company shown herewith. The axle proper is a one-piece pressed steel member of smooth

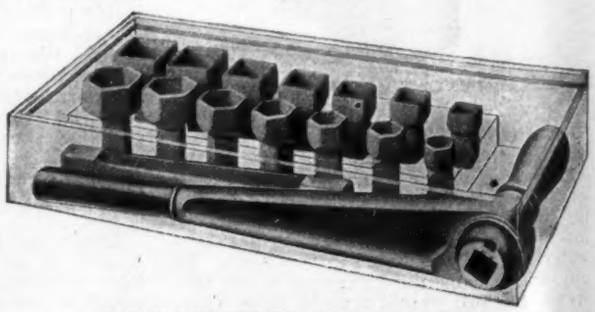
TIMKEN DIFFERENTIAL AND BEVEL CARRIER.

and regular outline. The gradually diverging lines of the tubes between the hubs and the central differential case does away with the angles and joints always found in the built-up types. The differential and bevel gear carrier is a compact unit that can be removed bodily from the axle housing without taking down the axle or disturbing brakes, hubs, or bearings. It is anchored to the front of the case. All bearings can be adjusted from the outside by means of worms. The brakes are internal and external on the rear hubs, 14 inches in diameter by 2 1-2 inches wide. The construction



INTERNAL AND EXTERNAL BRAKES.

has been greatly simplified and the number of parts reduced to the minimum. The axle will be made in floating and non-floating types for cars weighing up to 3,000 pounds empty and of 45 horsepower or less. With this form of construction of few parts and simple, the weight is reduced to a minimum without any corresponding sacrifice of strength.



MULTO AUTOWRENCH COMPLETE IN BOX.